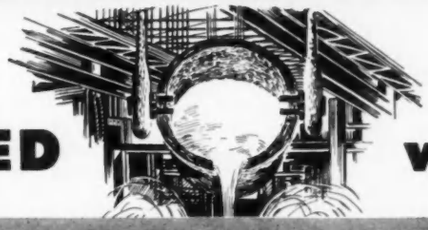
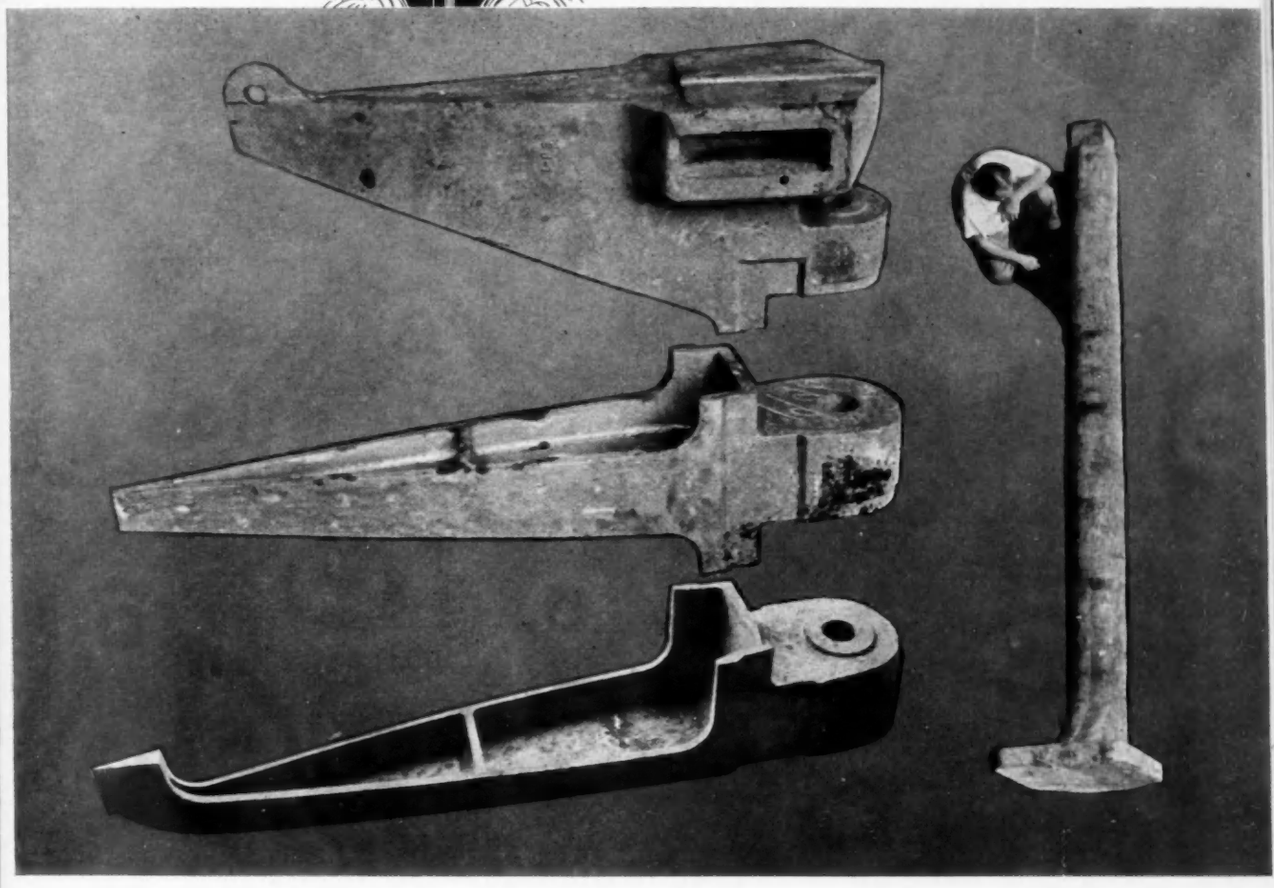
The OIL WEEKLY



POURED without ceremony



Pouring these huge rudder-arm castings is routine work with Hughes Tool Company . . . no music — no speaker — no cheering crowd signals the "launching" of molten metal into the molds which shape this vital equipment.

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THE OIL WEEKLY

ENGINEERING • NEWS • STATISTICS

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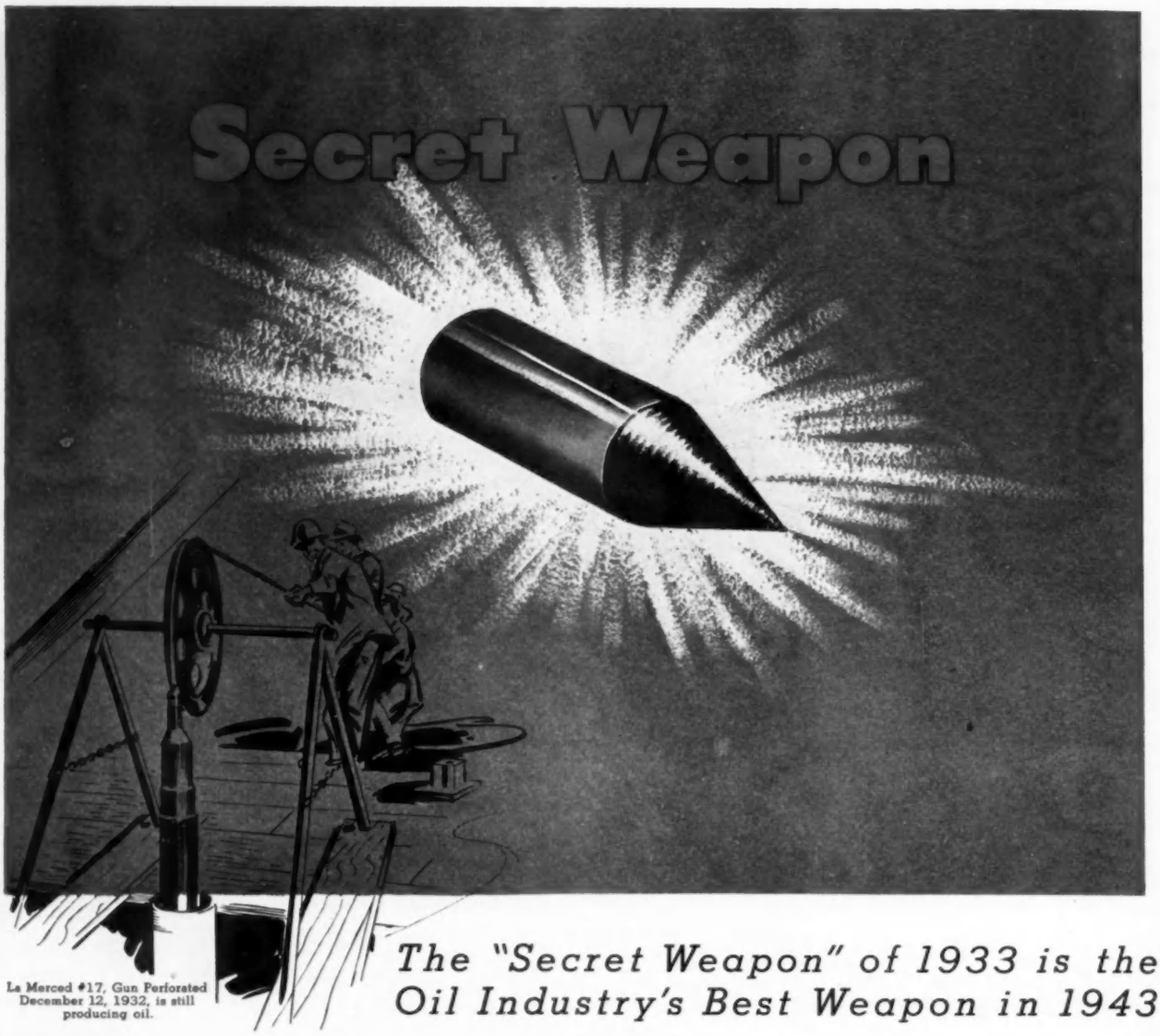
LOOKING AHEAD
. . . with the Editor

TWO years ago, new concepts and techniques in geochemical prospecting known as geodynamic prospecting were announced, and from time to time theoretical papers on the subject have been presented. An article to be published in an early issue will summarize results obtained from this new technique over the past two years, in order that readers may make their own appraisal of one of the new ideas that have been submitted as holding a potential solution to the dwindling oil discoveries and reserves.

The article will present a number of examples of surveys that have been made, and the results obtained.



La Merced #17, Gun Perforated December 12, 1932, is still producing oil.

The "Secret Weapon" of 1933 is the Oil Industry's Best Weapon in 1943

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The Changing Panorama

August Production To Be at Peak

HOW much more oil can the United States produce? Due to the extremely sharp gains in producing rates that have featured 1943, this question had become a matter for national consideration by July when production was at near all-time peak levels.

During August and coming months, the question of the nation's producing ability is due to receive additional consideration. The United States is being asked to produce more crude oil during August than in any previous month in history. The 96,100 barrel-per-day increase that PAW is seeking in August is due to send production of petroleum liquids to 4,424,000 barrels each day, of which approximately 4,175,000 barrels will be crude oil. The highest daily average production heretofore attained during any month was the 4,138,000 barrels of crude oil produced each day during January, 1942, and December, 1941. The allowable for August, consequently is nearly 40,000 barrels higher than the previous record output, and is 300,000 barrels greater than in August, 1942.

Again Texas is being called upon to furnish most of the increase. PAW has given the Lone Star state an allowable of 1,817,000 barrels, of which about 1,700,000 barrels is expected to be crude oil. Thus this state has been called upon for 300,000 barrels of additional oil per day within a four-month period.

Early Decision On Oil Prices

SHARPLY rising oil producing rates, and prospects that even larger quantities will be required in the future, are expected to result in an early decision on the proposed 35-cents-a-barrel increase in crude oil prices. Anxiety over the producing ability of the nation, and greater recognition of oil's importance to the war effort, are believed to have improved the chances of higher price ceilings being granted. Likewise, seen as a favorable omen is the consideration that oil supplies are getting from the top ranking heads of the government.

The matter of oil supplies and oil prices has even reached President Roosevelt during July, in addition to War Mobilization Director Byrnes and Economic Stabilizer Vinson. There no longer is any doubt that the final decision has been taken from OPA. Byrnes likely will decide whether stiffer rationing will be extended to parts of the country outside the East Coast, and Vinson is to decide the oil price question. Byrnes is studying the oil situation, and Vinson has held several conferences with state regulatory representatives, oil men and different congressmen.

Texas Output Near Maximum Capacity

THE Texas Railroad Commission is holding a series of meetings for the purpose of determining how much oil can be produced without physical waste. During the past week, the commission heard from approximately half of the sweet-oil fields in the state, and testimony of operators showed that they thought only about 100,000 barrels more oil could be produced daily than assigned to them for August.

The commission has not yet heard from West Texas, North Texas, East Texas and the Panhandle. The fields considered to date have all been located in the Gulf Coast and Southwest Texas regions. However, only West Texas is believed to have possibilities of producing materially greater amounts.

Testimony the past week, therefore, indicated that Texas has little additional sweet-oil-producing ability. This means that West Texas sour crudes are almost the only source for additional oils, and to obtain large quantities of this crude it will be necessary to construct pipe lines.

Big-Inch Line Is Another Oil Record

WELDING of the last joint of pipe in the Big-Inch line marks another transportation miracle accomplished for oil. That completion of this gigantic project in less than record time, in spite of all the exigencies of war, climate, topography and human infallibility, ranks as a miracle, no one will deny; for no group of men inspired by anything less than a frantic determination to help win the war at all costs, could have achieved such a performance.

About 2500 tank cars which formerly moved petroleum from the terminal at Norris City, Illinois, to the East Coast were immediately assigned to haul crude oil from the Southwest to the Atlantic seaboard—the immediate result of completion of the line. These tank cars were released when part of the oil flowing daily to the Norris City terminal began to move eastward through the eastern leg of the line.

A transportation system able to meet all the challenges of a nation fighting for its life is paramount in importance with the Army and Navy. Completion of the Big-Inch is one more assurance that regardless of the size of the emergency, the oil industry can and will meet it.

Off-Duty Accidents Need More Attention

WITH conservation of manpower ranking as a top problem in the industry today, more attention must be given to making the most of what is available. Accidents of various kinds are taking their toll in lost man-hours, as is evidenced by information gained from interviews with drilling contractors. Green help is slowing down work appreciably, and the accident rate is rising.

Strange as it may seem, off-duty mishaps result in more lost time than on-the-job accidents. The Department of Accident Prevention of API has just released figures on off-duty fatalities for 1942 bearing out the danger to workers away from their jobs. Companies employing 198,899 workers reported both their industrial fatalities and their off-duty accident-fatality experience for 1942. The total of 136 fatalities reported included 56 deaths resulting from industrial accidents and 80 deaths from accidents occurring while workers were off duty. The relative fatality rate for on and off-duty were 28 and 40 per 100,000 workers, respectively.

Off-duty fatalities involved the following: traffic, 43; drowning, 8; gunshot, 7; asphyxiation, 6; falls, 6; airplane, 4; burns, 1; electrical, 1; lightning, 1; not explained, 3.

Thus, the off-duty emphasis on safe practices and habits may well be stepped up by safety departments and directors. Any time lost through accidents plays into the hands of the Axis.

Pennsylvania Starts Production Research

A comprehensive research program for the Pennsylvania oil industry, with the twin objectives of increasing the supply of crude from the region immediately and to find more uses for the products made from the barrel, will be inaugurated soon under the sponsorship of the Pennsylvania Grade Crude Oil Association.

The necessity for such a program was emphasized by several of the speakers at the Association's annual meeting and these views of the current situation led to the adoption of the plan by the directors. Declining production of crude in the Pennsylvania Grade area has been a matter of concern to both producers and refiners for some time, and leaders in the industry came to the realization that forceful steps must be taken to reverse the trend.

To carry out the plan adopted a research director will be employed. His responsibility will be to correlate information, which is already available, on production practices and also to investigate ways in which output may be increased through other methods. In similar fashion he will supervise a program of research in refining which will be designed to effect constant improvement in the industry's principal product, premium lubricating oil, and to stimulate the development of new uses for products made from Pennsylvania crude.

Since the immediate need is for increased supplies of crude it is expected that emphasis in the new program will be given to the production phase of the problem. It is believed that the application of known and tried production methods in certain areas of the region will result in increased output within a short time. Under the Association's program and the guidance of the research director, operators in such areas will be urged to put these known methods into practice. Information on such operations and new engineering technique which is not now available to producers will be placed in their hands through the medium of this program.

At the same time a long-range program of fundamental research in production will be undertaken. The objective of these studies will be to find ways in which even more crude can be taken from the sands. While estimates vary, engineers are of the opinion that from two-thirds to three-quarters of the oil originally in the sands still remains after primary and secondary recovery operations have been carried to conclusion. Obviously, such a volume of oil is worth going after and it will be the objective of this research program to find the best ways to go about recovering this "extra crop" of crude. Even water-flooding, which is generally regarded as the most efficient of the secondary recovery practices employed to date, does not strip the sands of oil. Operators in the Bradford-Allegany area, where this practice has been developed most successfully, are of the opinion that new methods can be found to recover the huge volume of crude still in the sands.

Special Pumpers' Bicycles Conserve Cars

CONSIDERABLE car mileage is saved by the production department of one California company by supplying certain pumpers with special delivery-type bicycles. Suitable on those leases which have fairly good or all-weather roads, or in the town-lot areas, these bicycles come equipped with a small front wheel to carry a large basket in front of the high steering post.

The reinforced basket has ample capacity for one or two five-gallon cans, plus the usual assortment of smaller oil and sample cans, gauges, tapes and wiping rags. The bicycle is equally as maneuverable as the regular types, and the small front wheel has sufficient strength to support the load. It is easily parked in an erect position by means of a sturdy stand that may be brought down beneath the front wheel.

Not only does this method save on gasoline and tires of existing equipment, but it also releases other cars for duty on the more inaccessible leases, where the car replacement problem is by now becoming more acute.

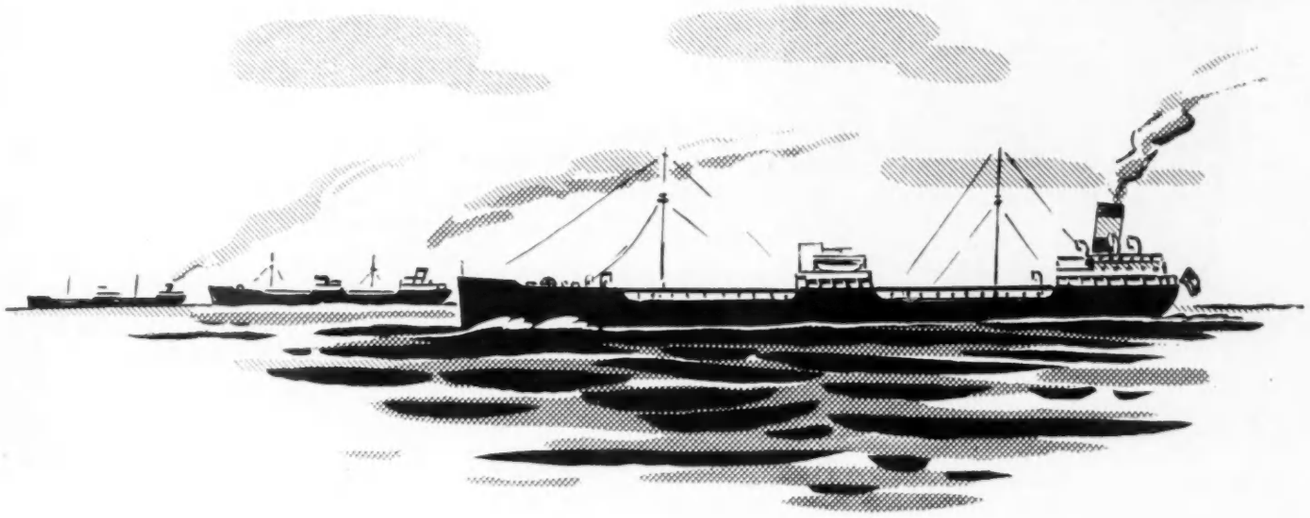
Arkansas Studies Secondary Recovery

The state of Arkansas has commenced work on the problem of reinjecting salt water back to the horizon from which it was produced in the newer fields of the state, and a study of the possibilities of secondary recovery projects in the older fields.

Dr. George H. Fancher, professor of petroleum engineering at the University of Texas, is in charge of the work. Steve DeBord, Jr., a petroleum engineer from the University of Texas, and C. V. Lisman, Jr., a geologist from the University of Arkansas, are Dr. Fancher's assistants.

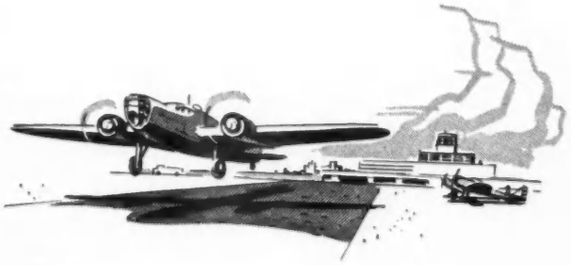
The work is being carried out as a cooperative project with various oil companies furnishing most of the information. It is expected the work will consume about one year.

OIL IS AMMUNITION



FLOATING TO VICTORY ON OIL

Eighty times as much oil and petroleum products were shipped overseas from the United States during the first 12 months of this war as were shipped in the first year of World War I, in which the Allies are said to have "floated to victory on a sea of oil."

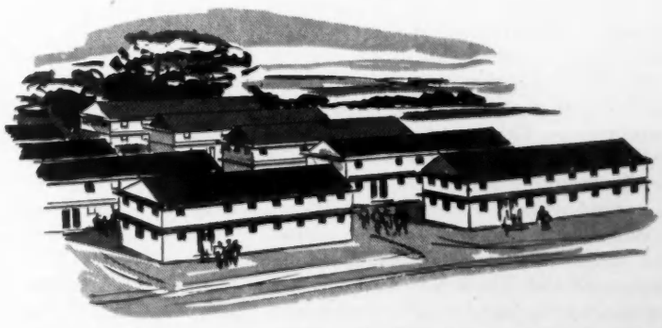


ASPHALT ROADS AND RUNWAYS HELP

Great quantities of asphalt, a petroleum residue, are used for the construction of roads for mechanized equipment and for airfield runways. As a result, troops and equipment can travel faster, planes can take off and land with a higher degree of safety, and the delay caused by rainy weather is trimmed to a fraction of the time that otherwise might be lost.

OIL IMPROVES BARRACKS

To keep out wind and rain, tar impregnated building and roofing papers are used extensively in construction of Army barracks and defense houses. In addition, large quantities of waterproofing materials which are by-products of oil refining are consumed yearly by the Navy.



Oceans of Oil Needed

YOUR JOB IS VITAL FOR VICTORY

Poster No. 4—THE OIL WEEKLY

Oil gains wide recognition as an important element in winning of war, as the past six months see large military consumption create fear it will be impossible for oil to meet additional requirements due in the future.
As a result, oil problems receive serious consideration nationally, which gives hope that definite and favorable action is to be taken on some of the industry's troubles.

Question of Becomes

OIL industry problems swung from a shortage of transportation to a shortage of production during the first six months of 1943. The outlook for shipping was improving rapidly, but sharply increased producing rates and prospects for further gains raised the question of how much more oil the United States could produce. Developments during the period served to emphasize the important role of petroleum in the war, to demonstrate beyond doubt that an extremely heavy responsibility rests upon the industry, and left the outlook of such nature as to constitute a definite warning that it may be impossible for the United States to continue to meet war demands for oil if consumption continues to grow at the rate which has existed in recent months.

As a result, increased attention was directed to the problem of the adequacy of crude supplies and the necessity for incentives to encourage production and exploration activities, and there is every indication that this question will become more important and critical as time passes. This gave encouragement that definite and favorable action might be forthcoming on such matters as price and drilling regulations.

With larger numbers of planes, ships and tanks due to come off assembly lines, and with more intensive fighting anticipated in both the European and Pacific theatres of war, all signs indicate that wartime use of oil has not yet reached its maximum level. The improving transportation outlook, the result of approaching completion of major pipe lines and rapid tanker building, also promised that the industry would be expected to produce and deliver a large quantity of products. Therefore, a greater demand for oil than ever filled before, and considerably above current high levels, must be satisfied during the next 12 months if the progress of the war is not to be impaired.

Recent Trends

Trends during the first six months of 1943 did not lend any encouragement that such record-breaking output might be successfully attained over a sustained period, but on the contrary resulted in an increasing fear that the responsibility is too great unless the industry is given greater assistance in the way of materials, manpower and prices. Outstanding developments during the past six months were sharply rising production levels, continued draft on above-ground stocks of refined products, and the discovery of too little new crude oil to offset quantities withdrawn.

In direct contrast with events during early 1942, production in 1943 bounded sharply upward almost month to month. Crude oil producing rates during July this year are 300,000 barrels per day greater than during January, and in approximating 4,100,000 barrels daily in July are but slightly under the all-time peak of 4,138,000 barrels attained in January, 1942, and December, 1941.

Already United States crude oil production is well on its way toward an annual all-time peak, having exceeded the output of any previous six months. A total of 706,881,000 barrels were produced during the six months. A new annual record will be established if 3,810,000 barrels are produced daily for the remainder of the year. Since this would be considerably under the current rate of about 4,100,000 barrels per day, a new record seems assured. With further gains in prospect, crude oil production for the year should average at least 4,150,000 barrels daily. Thus, 1943 annual crude production may be expected to exceed 1,525,000,000 barrels, in contrast with the present all-time peak of 1,404,000,000 barrels established in prewar 1941.

Despite the record producing rate, the supply of oil has not yet been balanced with consumption, and stocks of refined products continued to be lowered during the past six months. Aboveground stocks of refined oils are at record low level for recent times, and crude stocks are not far above the minimum for the past 20 years. Consequently, the industry must necessarily meet the prospective peak demanded by currently producing and refining practically all the oils needed. This is another indication that more crude oil must be produced and refined in the coming 12 months than in any preceding year in history.

At a meeting in early July, the Petroleum Industry War Council warned that the United States should not be counted on to produce without waste more than 4,200,000 to 4,300,000 barrels of crude oil daily during 1944 and 1945. Total demand, meanwhile, for crude oil falling on the United States already is approaching 4,200,000 barrels per day, and continues to trend sharply upward.

Another consideration that seriously dims the light of hope for the fulfillment of the industry's heavy responsibilities is that it is being asked to do all these record-breaking and unprecedented producing feats while allowed to drill only a substantially subnormal number of wells for the second year in succession.

The industry drilled only 21,412 wells during all 1942, one third less than in 1941. Another material reduction was in prospect for 1943, for only 8695 wells were completed in the first six months.

Meanwhile, results from the industry's wildcatting efforts indicated that less new oil was being found than produced. Although the number of wildcats completed the first half of 1943 represented a substantial volume not far below previous record volumes, not nearly as

Adequate Producing Ability Foremost Oil Problem

By WARREN L. BAKER, Editor

many were being drilled as PAW recommended. Only a few major fields were being discovered, and the number of small fields being found was not sufficient in size to make up the difference between new oil discovered and that being produced. Consequently, the industry's producing ability was declining while its production was climbing.

Doubt Grows

In view of the sharp growth in crude production, signs that it was already approaching the maximum rate and that producing ability was declining, there was a growing doubt that the industry would be able to produce enough oil to satisfy the rising tempo of military operations a year hence. Even the most faithful believers in the ability of the American petroleum industry now have some misgivings over the heavy responsibilities that war is thrusting upon it.

How much more oil will be needed to satisfy the machines of war, and how much more the industry can produce has become a question of national importance as a result.

Trends during the first six months of 1943 resulted in the development of an almost united front, both within and outside the industry, that oil is too important to the war effort to gamble with its supply capacity, that discovery rates are insufficient, and that the industry should be drilling more wells, especially wildcats, if it is to be in a position to provide definite assurance of the ability to produce sufficient quantities to meet all future needs. Nearly everyone is agreed that not only more materials are needed, but also that only a raise in crude oil price ceilings can provide the proper incentive.

A feature of the past six months was the recognition oil has received from members of Congress. Never before has the importance of oil to the country, both from a military and civilian economy viewpoint, been so widely recognized in political circles, and never before has the attitude been as favorable as at present. Numerous Congressional committees studied the oil situation during the six months, and without exception all reached the conclusion that oil is of unusual importance to the nation and is being treated unfairly. They recommended higher crude prices, favorable tax structures, and less government interference and red tape with the industry's operations.

With oil becoming more widely recognized as one of the most vital of all elements in winning the war, greater attention will be given to the question of whether the industry can meet the enlarged demand that may be imposed upon it a year or a year and a half hence. The amount of consideration given to the industry will grow as production is increased nearer and nearer to the maximum producing ability.

Higher Prices Likely

This condition lends hope that the problems of oil will receive serious and constructive action before the end of the year.

Historically, increased crude-oil prices have made available large crude oil supplies due to stepped up production and development activities. A year ago the industry commenced asserting that a higher price could be relied upon to bring about similar results at this time. However, it failed in an effort to get higher crude price ceilings, OPA turning a deaf ear. Instead of closing the matter, this action served only to increase the pressure brought to bear upon the question of oil prices. It was at this point that numerous Congressmen became especially active in behalf of oil. But despite the favorable attitude of Congress, OPA was still holding prices at old levels, although PAW filed a second recommendation with OPA that is under consideration at the moment.

Meanwhile, the matter of oil prices was getting consideration at the hands of ranking government heads, including President Roosevelt, War Mobilization Director Byrnes and Economic Stabilizer Vinson. In view of these circumstances, prospects for higher crude prices have been revived. The final decision as to whether oil prices should be advanced may no longer rest with OPA.

An early decision on oil prices is anticipated, July having seen the industry getting its most serious consideration. Vinson, the economic stabilizer, held three lengthy conferences on the subject of oil prices during the period. These resulted in President Roosevelt holding an oil conference with the Cabinet, Brynes and Vinson in July.

More Drilling Materials

While price was the main oil phase considered in proposed incentives to increase the country's producing ability, it was also recognized that it would be necessary to have the materials to drill with and that less stringent drilling regulations, especially spacing, might be helpful.

PAW took measures to reduce the influence of drilling regulations, relaxing spacing regulations in practically every shallow area of the country. These included the Appalachian region, most of Oklahoma and Kansas, Southwest Michigan, Illinois, Indiana, Kentucky and North Texas.

The favorable and widespread attention that oil is getting from the military, administration and congressional members should also prove helpful in laying the ground work for additional quantities of steel to be allocated to the industry at the first opportunity. As production rises to new heights and the fear of a shortage grows, an increasing number of people felt that larger steel allocations for oil-well drilling might be forthcoming before many months. PAW disclosed that the drilling program for the final quarter of this year had been raised from 4600 to 5200 wells, formal requests for such steel having been made to WPB.

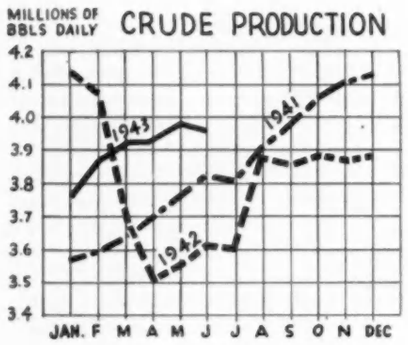
With many of the industry's heavy steel consumption projects being completed, including major pipe lines, aviation gasoline and synthetic rubber plants, there seemed to be a good possibility that this steel would continue to come to the industry and could be diverted to drilling operations.

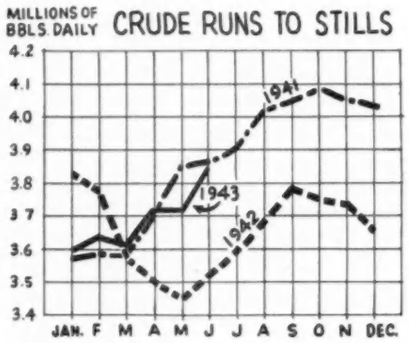
These factors gave hope that the industry henceforth would find it possible to drill a large number of wells.

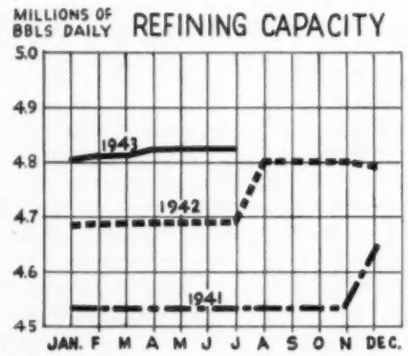
Record Crude Production and Runs Required to Meet Huge

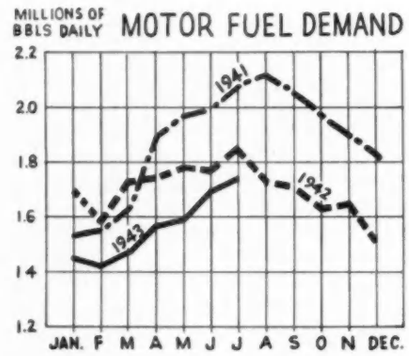
United States wells and refineries turn out unprecedented volumes of oils in first half of 1943 in meeting heavy demands, as only limited supplementary supplies are available in form of withdrawals from storage and imports of crude and fuel oil

By L. J. LOGAN
Associate Editor









ALTHOUGH participation in the war has forced curtailment of the normal use of gasoline, heating oil, and other products, there have been sharp increases in consumption of petroleum products for military purposes and for industrial purposes furthering the prosecution of the war. Consequently, the total demand for all oils has shown no great decline from former levels and now is running very close to the year-ago trend, with further gains in prospect for the latter half of the year.

In the first quarter of 1943, the total demand for all oils was about 9 percent smaller than that in the corresponding period of 1942, which reflected a brief extension into 1942 of the record demand of late 1941. However, a better comparison was made by the second quarter of 1943, as total demand for all oils during the period apparently was only between 1 and 2 percent smaller than in the second quarter of 1942. This year's second quarter reflected remarkably effective adjustment of the industry's facilities and operations to the conditions imposed by the war, whereas last year's second quarter reflected the full and heavy impact of tanker sinkings and other war-created problems, which the industry and the government still had only begun to solve.

Normally, reduced demand, such as that which was recorded for the first half of this year, would have resulted in similarly curtailed production and refinery processing of oil. But abnormal situation with regard to imports and storage prevented normal courses for production and refinery runs, and both reached unprecedented January-June

U. S. Crude Runs to Stills and Refining Capacity

(Thousands of Barrels)

STATE OR DISTRICT:	War Time Changes in U.S. Daily Average Refining Capacity: Available Dec., 1941	Available May, 1942	Available June, 1943	Percent Used Dec., 1941	Percent Used May, 1942	Percent Used June, 1943	War Time Fluctuations in Daily Average Refinery Runs of Crude: Peak Before U.S. Entry in War: Oct., 1941	Low After U.S. Entry in War: May, 1942	Current Data: June, 1943	Crude Runs in First 6 Months, 1942-1943: Total Amount 1942	Total Amount 1943	Daily Average 1942	Daily Average 1943	Percent Difference
East Coast, Texas, Inland, Texas Gulf, La. Gulf, Ark. & La. Inland	2,313	2,383	2,444	85.7	63.7	74.4	2,127	1,498	1,819	313,751	305,552	1,733	1,688	— 2.5
Appalachian	166	174	177	96.4	91.4	87.0	147	158	154	28,151	27,967	155	154	— 0.6
Ind., Ill., Ky., etc.	752	784	824	95.7	99.2	87.2	734	735	719	128,178	129,500	708	715	+ 0.9
Okla., Kansas, Mo.	413	418	416	73.6	86.1	82.9	368	359	345	62,930	61,631	347	340	— 2.0
Rocky Mountain	136	138	147	54.4	65.2	67.3	94	91	99	16,757	16,586	92	91	— 1.0
California	787	787	817	77.3	78.3	89.2	618	605	729	102,747	128,134	567	707	+24.6
Total United States	4,567	4,684	4,825	90.1	75.2	80.1	4,088	3,446	3,865	652,514	669,370	3,605	3,698	+ 2.5

High Refinery Military Needs

proportions. To an increased extent, it has been necessary this year to meet the requirements direct from domestic wells and refineries, with normal supplementary supplies of crude and fuel oil from foreign countries greatly curtailed; while it has not been possible to fall back on storage as a supplementary source of supply, inasmuch as stocks have been drawn down to critically low levels. In fact, it has been found expedient this year to endeavor to add to stocks of crude oil as a matter of safety, and actually, in the first 6 months, production was stepped up even above current needs to permit the addition of 7,000,000 barrels to storage. This re-building of storage in conjunction with curtailment of imports forced crude production artificially high. Similarly, crude runs to stills were forced exceptionally high by reduction of imports of fuel oil and by the inability to draw heavily as in 1942 on stocks of refined products.

These combinations of extraordinary circumstances explain why it has been that in the face of some curtailment of the demand, both crude oil production and refinery runs of crude were greater in the first 6 months of 1943 than in the corresponding months of any other year. The January-June production and refinery runs for the past three years have been as herewith indicated.

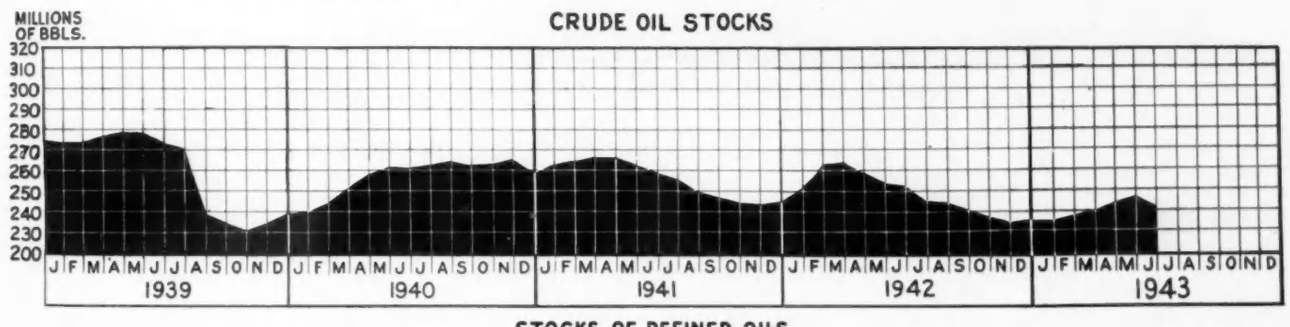
	First 6 Months (Thousands of Barrels)		
	1941	1942	1943
Crude Oil Production	667,338	680,536	706,881
Crude run to stills...	668,663	652,514	669,370

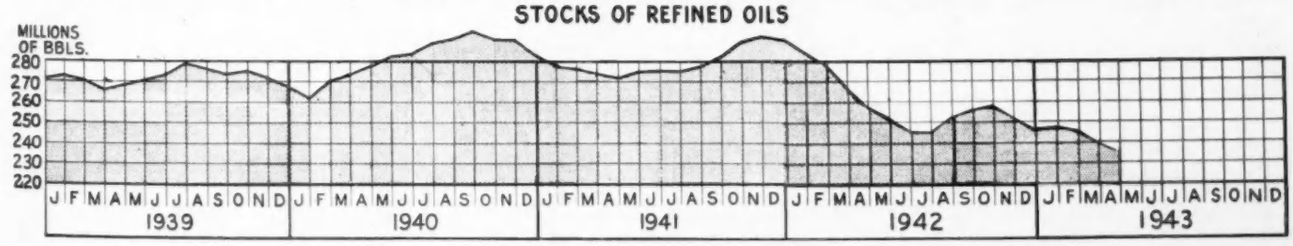
Production for the January-June period, 1943, was nearly 4 percent greater than that in the first half of 1942, and Crude Oil output is due to continue materially above the 1942 trend. During June, 1943, it was 9.6 percent greater than in June, 1942. And for July, 1943, the Bureau of Mines estimated that the daily average supply of domestic oil required to meet the market demand would be 6 percent higher than the actual for July, 1942. The further sharp rise in demand that is expected for the third quarter as compared with the second quarter will have to be met by additional increases in productoin or by withdrawals from storage. However, crude oil stocks were reduced 5,000,000 barrels during June and were down by

United States Crude Oil Production

(Thousands of Barrels)

STATE OR DISTRICT	War Time Fluctuations in Daily Average Production: Peak Before U. S. Entry in War: December, 1941	War Time Fluctuations in Daily Average Production: Low After U. S. Entry in War: April, 1942	War Time Fluctuations in Daily Average Production: Current Data: June, 1943	Production in First 6 Months, 1942-1943: Total Amount: 1942	Production in First 6 Months, 1942-1943: Total Amount: 1943	Daily Average: 1942	Daily Average: 1943	Percent Difference
Arkansas	74.3	71.6	74.7	13,233	13,250	73.1	73.2	+ 0.1
California	631.9	637.5	779.4	114,511	139,985	632.7	773.4	+22.2
Colorado	6.1	5.7	7.0	1,057	1,181	5.8	6.5	+12.0
Illinois	397.8	301.6	216.7	57,871	41,865	319.7	231.3	—27.6
Indiana	18.6	19.8	13.9	3,557	2,678	19.7	14.8	—24.8
Kansas	256.7	249.8	296.0	45,100	54,889	249.2	303.3	+21.7
Kentucky	12.7	11.9	21.1	2,114	3,556	11.7	19.6	+67.5
Louisiana	347.4	306.8	328.5	57,860	60,513	319.7	334.4	+ 4.5
North Louisiana	139.3	75.3	85.4	13,542	15,379	74.8	85.0	+13.6
South Louisiana	208.1	231.5	243.1	44,318	45,134	244.9	249.4	+ 1.8
Michigan	56.8	62.5	56.9	10,357	10,510	57.2	58.1	+ 1.5
Mississippi	70.5	96.2	53.5	15,862	10,013	87.6	55.3	—36.8
Montana	22.0	22.0	20.8	3,980	3,566	22.0	19.7	—10.4
Nebraska	5.1	3.9	2.1	701	393	3.9	2.2	—43.5
New Mexico	112.2	67.3	97.0	15,228	17,497	84.1	96.7	+14.9
New York	15.1	15.3	14.4	2,692	2,557	14.9	14.1	— 5.3
Ohio	9.9	10.6	9.2	1,771	1,584	9.8	8.8	—10.2
Oklahoma	427.6	389.6	334.7	71,615	61,393	395.6	339.2	—14.2
Pennsylvania	49.3	52.7	45.4	9,015	8,145	49.8	45.0	— 9.6
Texas	1,532.3	1,081.0	1,504.0	236,694	255,440	1,307.7	1,411.2	+ 7.9
East Texas Field	386.2	225.4	337.1	57,296	59,538	316.5	328.9	+ 3.9
Rest of East Texas	86.1	78.7	123.8	15,591	19,590	86.1	108.2	+25.6
North Texas	137.1	130.5	132.2	26,306	24,368	145.4	134.6	— 7.4
West Texas	302.4	185.8	229.8	42,017	39,269	232.2	216.9	— 6.5
Texas Panhandle	92.1	83.5	99.1	15,703	16,231	86.7	89.6	+ 3.3
Gulf Coast, Upper	303.2	227.5	381.8	47,833	62,868	264.2	347 3	+31.4
Gulf Coast, Lower	126.9	82.6	135.1	17,868	21,000	98.7	116.0	+17.5
Southwest Texas	78.2	48.0	57.6	10,636	9,505	58.8	52.5	—10.7
South Central Texas	20.1	19.0	16.5	3,444	3,071	19.1	16.9	—11.5
West Virginia	9.8	10.4	9.2	1,787	1,690	9.9	9.3	— 6.0
Wyoming	82.2	85.4	92.3	15,499	16,167	85.6	89.3	+ 4.3
Others	.2	.2	.....	32	9	0.1	0.0	.....
Total United States	4,138.5	3,501.8	3,968.6	680,536	706,881	3,759.8	3,905.4	+ 3.8



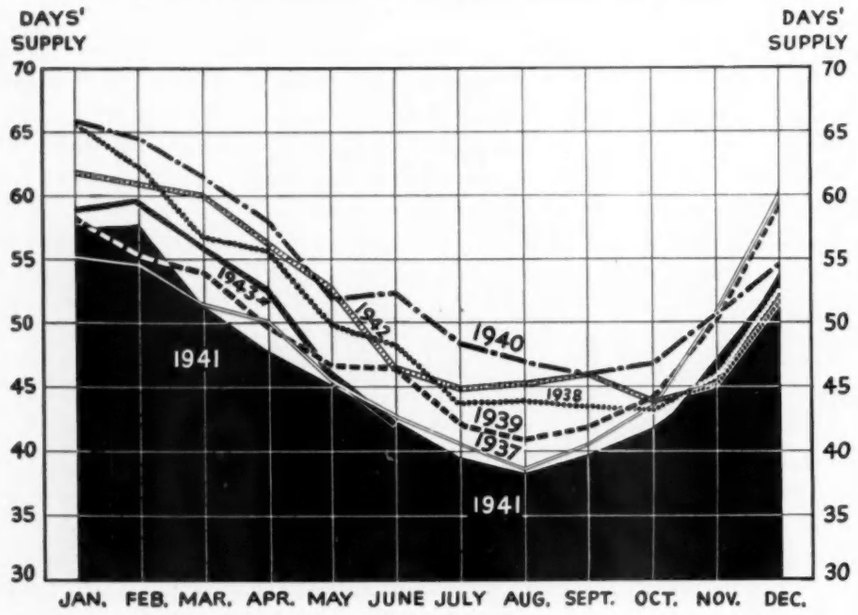


Fluctuations in Crude Stocks, by Grade or Origin, Since Pearl Harbor

(Thousands of Barrels)

GRADE OR ORIGIN	Outbreak of War for U.S. Dec. 13, 1941	High for 1942-1943 (Mar. 28, 1942)	Low for 1942-1943 (Dec. 12, 1942)	Latest Data (July 3, 1943)	Change from Mar. 28, 1942	Change from Dec. 12, 1942
Pennsylvania Grade	3,633	3,431	3,054	2,656	— 775	— 398
Other Appalachian	1,529	1,522	1,356	1,513	— 9	+ 157
Lima-Michigan	1,233	1,549	1,208	1,137	— 412	— 71
Illinois-Indiana	18,243	19,337	9,494	12,570	— 6,767	+3,076
Arkansas	2,591	2,977	2,068	2,625	— 352	+ 557
Kansas	7,400	7,696	6,898	8,588	+ 892	+1,690
Louisiana	12,348	13,669	12,732	14,966	+ 1,297	+2,234
Northern	3,849	4,223	4,745	5,359	+ 1,136	+ 614
Gulf Coast	8,499	9,446	7,987	9,607	+ 161	+1,620
Mississippi	2,202	2,445	1,174	1,288	— 1,157	+ 114
New Mexico	6,781	7,510	5,622	7,045	— 465	+1,423
Oklahoma	51,562	50,513	40,111	37,895	—12,618	—2,216
Texas	81,676	96,123	102,130	103,554	+ 7,431	+1,424
East Texas	20,549	23,677	24,468	20,984	— 2,693	—3,484
West Texas	18,070	23,961	24,252	25,607	+ 1,646	+1,355
Gulf Texas	23,935	25,889	28,388	30,534	+ 4,645	+2,146
Other Texas	19,122	22,596	25,022	26,429	+ 3,833	+1,407
Panhandle	.....	.....	4,670	5,646	.....	+ 976
North	.....	.....	7,491	6,862	.....	— 629
South	.....	.....	4,879	5,261	.....	+ 382
Other	.....	.....	7,982	8,660	.....	+ 678
Rocky Mountain	16,267	16,628	13,934	13,468	— 3,160	— 466
California	34,574	38,454	31,965	33,536	— 4,918	+1,571
Foreign	2,644	1,354	150	86	— 1,268	— 64
Total Gasoline-bearing in U. S.	242,683	263,208	231,896	240,927	—22,281	+9,031
Heavy in California	10,128	11,336	10,607	9,997	— 1,339	— 610

Days' Supply of Motor Fuel in Storage in United States at End of Month, on Basis of Demand in Succeeding Month



Trends of Total Demand for Motor Fuel in First 7 Months 1941, 1942, 1943

(Thousands of Barrels; Data from Bureau of Mines.)

MONTH	1941 (Actual)	1942 (Actual)	1943 (Forecasts)	Percent Diff. '41-'43	Percent Diff. '42-'43
January	47,389	52,192	44,800	— 5.4	—14.1
February	43,254	44,593	39,700	— 8.2	—10.9
March	50,498	53,493	45,600	— 9.6	—14.7
April	56,682	52,162	47,100	—16.9	— 9.7
May	60,895	55,079	49,400	—18.8	—10.3
June	59,622	53,319	51,100	—14.2	— 4.1
July	64,509	57,654	54,300	—15.8	— 5.8
Total 7 Months	382,849	368,492	332,000	—13.2	— 9.9
Daily avge: July	2,081	1,860	1,751	—15.8	— 5.8
Daily avge: 7 Months	1,806	1,738	1,566	—13.2	— 9.8

U. S. Stocks of Motor Fuel at End of June in Recent Years

(Actual and in Terms of Days' Supply)

YEAR	Stocks, June 30, (Thousands of Bbls.)	Daily Average Demand in Succeeding Month (Thousands of Bbls.)	Days' Supply Represented by June 30 Stocks
1937	73,866	1,739	42.4
1938	80,676	1,669	48.3
1939	81,144	1,745	46.5
1940	93,276	1,792	52.0
1941	88,646	2,081	42.5
1942	86,651	1,860	46.5
1943	74,328	1,751	42.4

the end of that month to about 240,000,000 barrels, or 12,000,000 barrels lower than a year previously, and only about 10,000,000 barrels above the 20-year low of late 1939, indicating that any further large withdrawals from stocks might cause shortages in some districts.

Crude oil stocks currently are at about the same level as when Pearl Harbor was attacked. They climbed sharply after Pearl Harbor, when tanker sinkings came, and they now are 22,000,000 barrels lower than the high that they reached in the spring of 1942, but they were drawn upon heavily in late 1942 and approached their 20-year low, and are at present only 9,000,000 barrels above that late-1942 low. Between January 1 and July 1 this year United States crude oil stocks were increased about 7,000,000 barrels, and most districts contributed toward the gain, exceptions having included Oklahoma, which took out over 2,000,000 barrels, East Texas, which withdrew 3,500,000, North Texas, which took out over 500,000, and the Rocky Mountain and Pennsylvania districts, each of which withdrew nearly 500,000 barrels. While Illinois formerly was furnishing crude from storage, it added 3,000,000 barrels in the first half of this year.

While United States crude oil production was 4 percent greater in the first half of 1943 than in the like period of 1942, there have been increases in some districts, while decreases have occurred in other areas, in reflection of changes in demand geographically, in meeting war needs. In response to heavy demand in the Pacific, California produced 22 percent more oil in the first half of this year than in the similar period of last year. The Rocky Mountain states, too, have registered increases: 12 percent for Colorado and 4 percent for Wyoming, while Montana showed a 10 percent decrease.

Demand has been very strong in the Middle West and in the upper Mid-Continent, but only a few of the states in those districts have had the producing ability to come forward with increased production. Kentucky's production has been 67 percent larger than last year and Kansas 22 percent higher, while Michigan records a 1.5 percent increase. Decreases in District 2 included 27 percent in Illinois, 25 percent in Indiana, 43 percent in Nebraska, 10 percent in Ohio, and 14 percent in Oklahoma. In the East, too, decreases were the rule, having included those of 5 percent in New York, 9 percent in Pennsylvania, and 6 percent in West Virginia.

In the Southwest, some districts have produced more than last year and some less. Arkansas shown a fractional increase, while other gains include those

of 14 percent for North Louisiana, 2 percent for South Louisiana, 15 percent for New Mexico, 8 percent for Texas as a whole, 4 percent for the East Texas field, 25 percent for the rest of East Texas, 3 percent for the Texas Panhandle, 31 percent for the upper Texas Gulf Coast, 17 percent for the lower Texas Coast. Decreases have included 37 percent in Mississippi, 7 percent in North Texas, 6 percent in West Texas, 10 percent in Southwest Texas, 11 percent in South Central Texas.

Runs to Stills

Crude oil run to stills in the first half of 1943 was 2.5 percent greater than in the initial half of 1942. This increase is accounted for by a 25-percent stepping up of plant operations in California and a 1-percent increase in the Middle West. Partially offsetting those increases have been decreases of 2.5 percent in the combined East-Coast Southwestern districts, 0.5 percent in the Appalachian region, 2 percent in Oklahoma-Kansas and 1 percent in the Rocky Mountain states. Runs averaged 3,865,000 barrels per day during June, 1943, and were within about 200,000 barrels of the all-time peak of 4,088,000 barrels reached in October, 1941. The current runs are more than 400,000 barrels per day higher than the low reached in the spring after Pearl Harbor, giving evidence of the restoration of operations on the East Coast and Gulf Coast as well as the stepping up of runs in California. Refineries were utilizing 80 percent of capacity in June, compared with 90 percent of a smaller capacity when runs were at their all-time peak in December, 1941.

Although crude runs to stills were 2.5 percent greater in the first half of 1943 than in the like period of 1942, production of gasoline was down about 9 percent, in line with a similar decrease in demand. In April, 1943, the yield of gasoline was only 35.3 percent of the barrel of crude, compared with a

[*Continued on page 36*]

Production of and Indicated Demand for Petroleum and Products (Not Considering Imports in 1942 and 1943)

Based on data from Bureau of Mines (thousands of barrels)

ITEM	JUNE 1941	JUNE 1942	JUNE ‡1943	JUNE Percent Change 1942-1943	FIRST 6 MONTHS 1941	FIRST 6 MONTHS 1942	FIRST 6 MONTHS ‡1943	FIRST 6 MONTHS Percent Change 1942-1943
All Oils								
Production:								
Crude	115,027	108,595	119,058	+ 9.6	667,338	680,536	706,881	+ 3.8
Natural Gasoline	5,095	6,558	7,000	+ 6.7	29,621	40,809	43,418	+ 6.3
Benzol	274		†		1,749	597	†	
Total Production	120,396	115,153	126,058	+ 9.4	698,708	721,942	750,299	+ 3.9
Imports	6,182				43,374			
Change in Stocks	—3,125	—9,224	—5,000		—11,456	—36,581	—10,405	
Demand	129,703	*124,377	*131,058	+ 5.3	753,538	*758,523	*760,704	+ 0.2
Crude Oil								
Production	115,027	108,595	119,058	+ 9.6	667,338	680,536	706,881	+ 3.8
Imports	4,332				22,014			
Change in Stocks	—3,036	—3,156	—3,865		—5,004	+4,537	+7,331	+61.5
Demand	122,395	*111,751	*122,923	+ 9.9	694,356	*675,999	*699,550	+ 3.4
Gasoline								
Production	55,136	44,250	46,688	+ 5.5	313,297	295,854	269,702	— 8.8
Imports					1			
Change in Stocks (Finished Gasoline)	—3,067	—7,381	—4,475		+4,552	—6,333	—2,428	
Demand	58,203	*51,631	*51,163	— 0.9	308,746	*302,187	*272,130	— 9.9
Kerosene								
Production	5,218	4,929	6,330	+28.4	35,901	34,562	36,709	+ 6.2
Imports					43			
Change in Stocks	+1,188	+1,064	+1,958		+97	—102	—2,012	
Demand	4,030	*3,865	*4,372	+13.1	35,847	*34,664	*38,721	+11.7
Distillate Fuel Oil								
Production	14,697	15,210	15,409	+ 1.3	92,072	90,958	99,399	+ 9.2
Transfers from Crude	210	195	250	+28.2	1,220	1,174	1,450	+23.5
Imports	211				1,887			
Change in Stocks	+2,869	+2,220	+1,492		—4,571	—17,425	—11,088	
Demand	12,249	*13,185	*14,167	+ 7.4	99,750	*109,557	*111,937	+ 2.1
Residual Fuel Oil								
Production	27,882	28,352	33,823	+19.2	164,125	173,517	198,020	+14.1
Transfers from Crude	1,070	1,610	1,800	+11.8	4,802	10,193	11,209	+ 9.9
Imports	2,083				15,669			
Change in Stocks	+469	—2,047	—690		—8,287	—16,854	—4,675	
Demand	30,566	*32,009	*36,313	+13.4	192,883	*200,564	*213,904	+ 6.6

* Indicated demand not considering imports. † Included with natural gasoline. ‡ Bureau of Mines for first 4 months; May and June estimated with aid of A.P.I. weekly reports.

War Time Changes in Refinery Yields of Major Products, By Districts

Percent Yield from Barrel of Crude in April

REFINING DISTRICT	April, 1941	April, 1942	April, 1943
Gasoline:			
East Coast, Texas, Louisiana, Arkansas	42.8	36.4	35.5
Appalachian	47.0	42.2	37.2
Ind., Ill., etc.	50.8	49.1	41.6
Okla., Kansas, Mo.	51.4	49.4	39.3
Rocky Mountain	48.2	45.3	42.5
California	32.7	31.3	25.8
Total United States	43.7	39.9	35.3
Kerosene:			
East Coast, Texas, Louisiana, Arkansas	6.6	5.8	6.9
Appalachian	6.2	6.5	7.5
Ind., Ill., etc.	4.8	6.5	5.8
Okla., Kansas, Mo.	6.8	7.5	8.8
Rocky Mountain	2.8	1.8	2.7
California	1.6	1.2	1.0
Total United States	5.4	5.3	5.6
Gas Oil and Distillate:			
East Coast, Texas, Louisiana, Arkansas	15.0	15.7	15.7
Appalachian	8.0	10.5	13.3
Ind., Ill., etc.	9.7	11.4	15.5
Okla., Kansas, Mo.	10.4	12.7	15.2
Rocky Mountain	8.5	11.3	10.2
California	14.7	10.5	13.5
Total United States	13.2	13.4	14.9
Residual Fuel Oil:			
East Coast, Texas, Louisiana, Arkansas	23.1	28.5	28.1
Appalachian	14.4	17.0	19.5
Ind., Ill., etc.	20.2	20.7	26.9
Okla., Kansas, Mo.	18.1	18.5	21.5
Rocky Mountain	21.4	26.4	26.4
California	40.7	45.0	46.2
Total United States	24.6	28.1	30.5
Lubricating Oil:			
East Coast, Texas, Louisiana, Arkansas	2.9	3.8	3.2
Appalachian	12.4	12.2	9.8
Ind., Ill., etc.	1.6	1.8	1.6
Okla., Kansas, Mo.	3.2	3.4	4.1
Rocky Mountain	0.4	1.2	0.6
California	1.9	1.3	1.2
Total United States	2.8	3.3	2.8

U. S. Stocks of Major Petroleum Products at End of June, by Districts

(Thousands of Barrels)

REFINING DISTRICT	June 30, 1941	June 30, 1942	June 30, 1943	Percent Change From 2 Years Ago	Percent Change From 1 Year Ago
Gasoline: (Finished and Unfinished)					
East Coast, Texas, Louisiana and Arkansas	43,076	41,638	31,266	— 27.4	— 24.9
Appalachian	3,292	2,676	2,354	— 28.5	— 12.0
Indiana, Illinois, Kentucky, etc.	17,786	16,515	16,466	— 7.4	— 0.2
Oklahoma, Kansas, Missouri	7,595	7,722	6,280	— 17.3	— 18.6
Rocky Mountain	2,036	2,294	1,842	— 9.5	— 19.7
California	16,057	16,672	20,653	+ 28.6	+ 23.8
Total United States	89,842	87,517	78,861	— 12.2	— 9.8
Gas Oil and Distillate:					
East Coast, Texas, Louisiana and Arkansas	21,673	15,075	14,054	— 35.1	— 6.7
Appalachian	376	527	1,027	+173.1	+ 94.8
Indiana, Illinois, Kentucky, etc.	3,774	3,663	4,896	+ 29.7	+ 33.6
Oklahoma, Kansas, Missouri	1,397	1,444	1,862	+ 33.2	+ 28.9
Rocky Mountain	296	306	348	+ 17.5	+ 13.7
California	10,853	11,486	12,130	+ 11.7	+ 5.6
Total United States	38,369	32,501	34,317	— 10.5	+ 5.5
***Residual Fuel Oil:**					
East Coast, Texas, Louisiana and Arkansas	19,180	16,221	12,455	— 35.0	— 23.2
Appalachian	539	613	562	+ 4.2	— 8.3
Indiana, Illinois, Kentucky, etc.	3,568	3,184	3,216	— 9.8	+ 1.0
Oklahoma, Kansas, Missouri	2,066	1,516	1,624	— 21.3	+ 7.1
Rocky Mountain	640	671	646	+ 0.9	— 3.7
California	55,024	44,136	38,613	— 29.8	— 12.5
Total United States	81,017	66,341	57,116	— 29.5	— 13.9

* Exclusive of heavy crude in California.

An Optimistic Angle on Oil Reserves

By DORSEY HAGER, Geologist

MUCH is being written and discussed about the oil possibilities of the United States now that another period of scarcity is forecast as just around the corner. Our crude oil reserves are being drawn upon, drilling has declined, and new oil must be sought, but there is no immediate cause for alarm, nor should oil operators be stampeded into drilling thousands of unnecessary dry holes. There still remains much favorable area for prospecting.

There is an active play in Northern Wyoming and Southern Montana due to the finding of prolific wells in the Elk Basin field—a relatively small but well defined dome, cut by the boundary between Montana and Wyoming. Elk Basin is an old field and deeper oil possibilities there were assured, as the Byron field, further south, had prolific production from the deeper Paleozoic horizons now found productive at Elk Basin. Naturally, all the structures in Wyoming not yet drilled to the deeper Permian and Pennsylvanian horizons, the Embar and the Tensleep will be deepened as rapidly as possible, and a few undrilled block oil structures will be tested; but for anyone to presume that many structures of size remain untested in Northern Wyoming and in Southern Montana merely reflects his unfamiliarity with the area.

For Northern and Central Montana, the situation is different. There are domes and numerous faults and faulted structures untested, or only slightly tested, some of which will, no doubt, prove productive at depths of 3000 to 8000 feet, but even in Northern and Central Montana there has been much intelligent prospecting.

In Northern Montana, tests to the Madison limestone of Mississippian age, and to the Devonian section found productive at depths further north, in the Turner Valley field of Alberta, Canada, are now causing much interest. The folds are sharp, but if proven productive will open a large area to intensive development. Northern Montana also has some fault block areas that may prove quite prolific, and also faults without folding, or only slight folding, not dissimilar to the Balcones Fault System of Texas. Nearly all these structures can be determined by surface geology.

In the Dakotas, the situation is different, but even there surface geology would define most of the structures. The very low regional dips in the Williston Basin, 5 to 10 feet per mile, make any marked change of dip show clearly. In places, glacial drift obscures the underlying beds but the structures there will be more readily picked up by surface work than by geophysical methods, which, however, can be used in places to check surface work, or can be used where the drift obscures wide areas. Some new oil fields should be opened in the Dakotas, especially in the Dakota sandstone and in lower Paleozoic beds.

Nebraska will undoubtedly have some new fields west of the Nemaha ridge and southeast of the Black Hills uplift. Geophysical prospecting should prove fruitful there. This area is merely a continuation of the Kansas productive area.

No doubt the present search for new oil fields will extend to Southeast Colorado again, and to parts of Arizona, yet a virgin state for commercial oil. In Arizona there is a structural basin nearly 100 miles wide and 125 miles long which has definite oil possibilities at depths ranging from 2000 to 10,000 feet, but has been neglected. It may now have renewed activity.

Utah still has a number of interesting structures, and should have some oil fields, especially in the southern part. Seepages in the San Juan field are not to be taken too lightly, and while the area is not readily accessible, it does possess promise for the future.

West Texas and New Mexico still have large areas only partially tested, especially in the Panhandle boundary contiguous to northeast New Mexico. There is good folding there and certainly some of those folds should prove productive in both states.

Oklahoma and Kansas still have oil possibilities of importance. Western Kansas, no doubt, will have numerous new oil fields as wildcatting there slowed down greatly due to the price and to proration.

Among the Mid-Continent States, Missouri and Iowa still remain enigmas. Hopes for the Forest Basin were high several years ago. Prospecting there was unsatisfactory, but the few holes drilled barely scratched the area, and an intensive campaign there will undoubtedly result in some new gas and oil fields in the Pennsylvanian, Devonian, and Ordovician beds.

Michigan will be the source of new oil fields, as there is much untested acreage, but structures are hard to find except by sub-surface work, and that is slow. A few shallow fields may even be found in the eastern part of Wisconsin.

Illinois still has numerous sandstone fields yet to be opened, and numerous limestone fields will be found in the Devonian, Silurian and Ordovician horizons in Western Illinois, and even deeper production may be found. Much new Pennsylvanian sandstone production will be found in Illinois, a source of oil just beginning to be seriously considered again.

Indiana has not been as intensively prospected as many oil operators assume. There are still numerous oil fields to be opened there in the sandstones and in the limestones, of that state.

Kentucky is set for some new fields, and production there will be increased, but there has been far more prospecting in Kentucky than is generally understood—particularly shallow tests. The best chances for deep Kentucky production (5000 to 8000 feet) lie in the Coal Basin of Central and Southwest Kentucky, where geophysical surveys will prove most helpful.

Tennessee, so far, has not proved of value for testing. Geophysics will prove of little importance, except in Southwest Tennessee. Some new fields will undoubtedly be found in the Mountain areas, but the folding is sharp, and the fields will be small in size. If the Knoxville dolomite should be found productive, results might prove surprising.

Mississippi will, no doubt, have some new oil fields. It has not been thoroughly prospected, and has enough production to stimulate continued searching for new fields, which will undoubtedly be found.

Louisiana and Arkansas are two producing states which should be con-

sidered from the viewpoint of added production from deeper horizons, and from new fields. The Wilcox possibilities of Louisiana have by no means been exploited fully, which is also the case in Southeast Texas. Also, the salt dome belt will continue to furnish some new oil fields in both Louisiana and Texas.

Alabama, Southern Georgia, and Florida are yet to produce oil or gas in commercial quantities and are among the possible oil states from a stratigraphic viewpoint. Geophysics will be the answer to structures there.

On the Pacific Coast—Northern California, Oregon, and Western Washington still present opportunties, but it requires a long pocketbook to find production. Surface geology is sufficient to define the fields. The best prospects in California come from deepening wells in the present fields wherever possible, to the underlying horizons, and in drilling old folds only slightly tested. California has been well tested and only a few spots remain where new fields may be found.

There are not many new places that will justify extensive prospecting campaigns, but new activities are now justified in all the outlying areas lightly passed by when the prolific East Texas and West Texas fields were opened. However, the most careful scrutiny should be given each area before undertaking work there, as it may surprise many operators to find areas well tested that they considered nearly virgin. Oil prospecting 20 years ago was scientific, but based on surface geology. Geophysical methods still occupy an important role, but prospecting in the west and in the Rocky Mountain area is still largely a surface geological play, although in some places geophysical methods can be used to advantage. The pendulum is swinging now to the employment of subsurface geology in the older producing areas, but geophysics, especially the use of the seismograph, still has an important role to play in prospecting and is an important adjunct to the geologist using surface and subsurface methods.

Oil producers all hope to find another East Texas. No one can tell without drilling just what the prospects may be. The finding of tar sands like those near Ft. McMurray in Alberta is always a possibility; 200 billions barrels of oil are reported to occur there in the outcropping tar sands. Find another area like that in Canada, or in the Dakotas under cover, and our oil reserves will be multiplied by ten. It is not wise to count on such discovery, but it is reasonable to believe that such a pool may yet be located.

Even though many new oil fields are not found, there is no need to worry, since plenty of oil is locked up in our oil shale beds, in outcropping tar sands, and in lignite and coal beds. Perhaps we will draw on South American crude oil resources first to augment our failing reserves, but once the war is over, if many new North American oil fields are not found before then, several billion dollars will be allocated for the mining of oil shale and for the development of oil from coal, so there will be no lack of oil products, nor no need to fear a shortage of oil products in the future. However, there is every reason to believe that we still have important untapped oil reserves that will be found after an intensive search has been undertaken, and it is too early to become pessimistic if history conveys any significance, as all the earlier predictions of shortage proved fallacious. Only an intensive drilling campaign will supply the answer.

Oil and gas areas in the United States and where productive areas may be found—1936. As good today as in 1936. Nebraska-Illinois basin have been found since this map was prepared for "Fundamentals of the Petroleum Industry."

Water Shortage Overcome by Converting Windmill to Gas Power

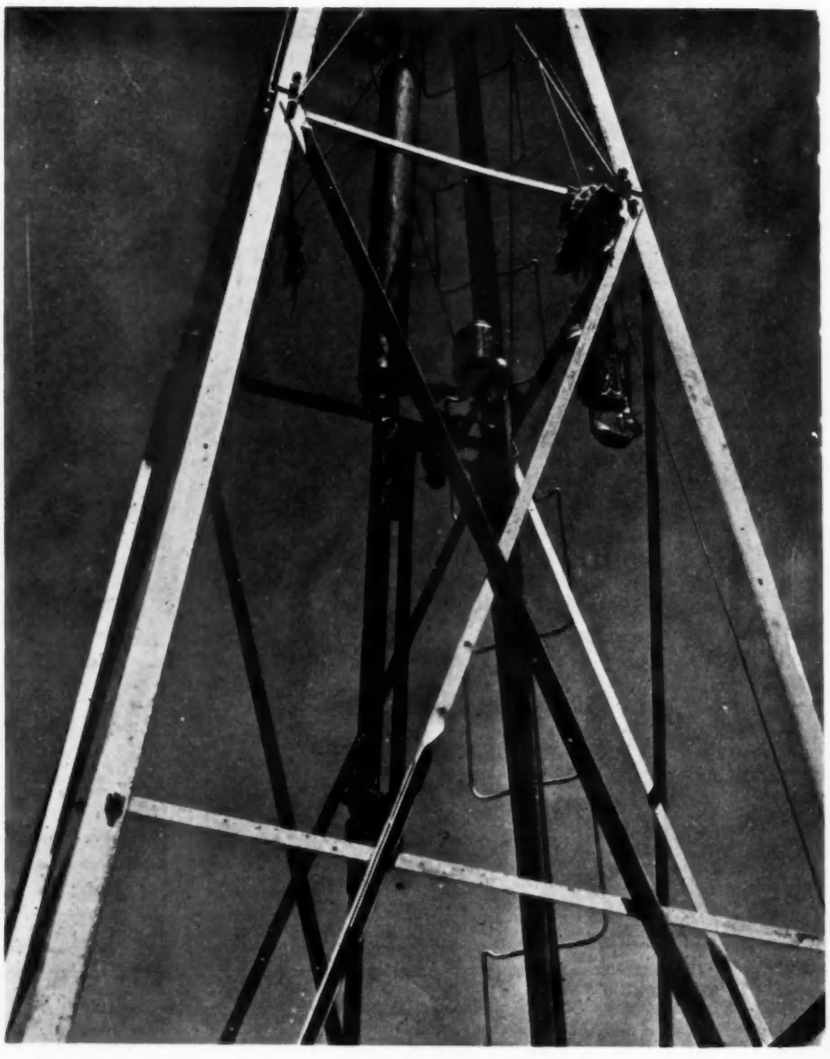
By H. R. WEBB
Engineer

In replacing the wind as motivating power for the water pump, the gas pressure cylinder and piston assembly is hung in the windmill derrick. The barrel surrounding the sucker rods above the stuffing box is filled with concrete and is attached to the rods, thus providing sufficient weight to pull the piston on the down stroke.

TO REMEDY a situation wherein lack of sufficient constant wind to drive a windmill-operated water pump created a shortage of necessary water, an old intermitter cylinder from an unused gas-lift unit has been rigged up on a West Texas lease with a link mechanism and piston to make a very efficient gas-pressure drive for the water pump. Thus, through utilization of power and equipment on hand, a constant adequate water supply is now available.

The principal unit in this mechanism is the link operating the gas valve. This link, riding with the sucker rods, opens and closes (according to its position) a three-way gas port (valve) which in turn allows gas under pressure to enter the cylinder and work against the piston, then exhaust itself and close again to seal off the pressure. This three-way valve is a standard stock item in most hardware stores. Stops are provided to prevent the link mechanism from moving to damaging lengths.

The unit is operated from the usual lease gas pressure of 300 pounds per square inch. In order to prevent the engine and pump tearing itself apart, a positive type choke is placed in the gas feed line. This choke regulates the speed of operation of the pump. Tests conducted on the unit show that at its normal operation of twenty-six 48-inch strokes per minute, the 2¼-inch water pump is capable of displacing 8.06 barrels per hour. The gas used amounts to 238 cubic feet per barrel of water produced.



A close-up of the cylinder and the link mechansim is shown here. Speed of operation is controlled by gas pressure regulation which in turn is accomplished by means of a positive choke placed in the feed line. The up stroke is the only power stroke as return of the piston is accomplished by gravity.

Results of Intensive Wildcatting Not Enough to Meet Needs

Exploratory drilling is near record high level despite the difficulties of securing materials, but additions to reserves are far below requirements

THE petroleum industry has carried on this year a near-record volume of wildcat drilling, in recognition of the obvious need for new oil and gas fields. But the amount of wildcatting has not been enough. It has not fulfilled the program regarded by the Petroleum Administration for War as essential, from the standpoint of the number of exploratory tests completed. The too-limited exploration has been doubly unsatisfactory because of yielding comparatively poor results as to the proportion of productive wells and as to the calibre of the discoveries.

In short, the industry drilled fewer wildcats in the first half of 1943 than were obviously needed; and even on the inadequate volume of wildcatting that it carried out, it scored below par in finding new sources of production.

The greatest number of wildcats completed in the United States within a year was 3264 recorded for 1941, and that number was almost equaled in 1942 when 3166 exploratory tests were drilled. However, PAW called for a sharp stepping up of wildcatting in 1943, having asked for 4500 tests, in an effort to find sufficient flush fields to assure continuing ability of the nation to produce currently all the oil necessary in vigorously waging the war. The agency is thinking only secondarily of the need for finding new sources to compensate for those being depleted, and is thinking primarily of the need for finding large numbers of flush fields which can immediately yield oil in large volumes, in satisfying urgent and heavy wartime requirements.

Actually, in the first half of 1943, there were completed in the United States 1602 exploratory tests, indicating an annual rate of 3204 wildcats, or only 71 percent of the 4500 considered essential.

While the exploration of this year has been closely in line with last year as regards number of wildcats drilled, the proportion of successful tests has been considerably lower this year.

Exclusive of semi-wildcats and extension tests, of which records were not kept for 1942, there were in the first 6 months of this year 1503 wildcats completed, or 1 percent less than the 1519 finished in the corresponding months of last year. However, the number of successful wildcats was 20 percent lower this year than last year, having totaled only 224 against 281. Only 14.9 percent of the total wildcats of the first half of 1943 discovered new sources of production of oil, distillate, or gas, in comparison with 18.4 percent that were

Wildcats Completed in the United States in First Half of Year

STATE OR DISTRICT	PRODUCTIVE TESTS: Oil Discoveries: Fields	Oil Discoveries: New Pays	Oil Discoveries: Extensions	Distillate Discoveries: Fields	Distillate Discoveries: New Pays	Distillate Discoveries: Extensions	Gas Discoveries: Fields	Gas Discoveries: New Pays	Gas Discoveries: Extensions	Total Productive Tests	UNPRODUCTIVE TESTS: Wildcats	Semi-Wildcats	Total Unproductive	TOTAL WILDCATS: First Half 1943	Except Extensions on Semi-Wildcat Tests: Total 1943	Total 1942	Productive 1943	Productive 1942
Alabama											1		1	1	1	3		
Arkansas	1	3	2	1					1	8	22	1	23	31	27	9	5	4
California	2	1	3				2		1	9	98		98	107	103	48	5	3
Colorado											1		1	1	1			
Georgia																2		
Illinois	10	21	19				1			51	166		166	217	198	259	32	42
Indiana	2		4							6	35		35	41	37	36	2	9
Kansas	27	3	2							32	188	3	191	223	218	179	30	28
Kentucky	6									6	30		30	36	36	13	6	1
Louisiana	7	4	3	2	2	2	1	2		23	48	3	51	74	66	86	18	24
North Louisiana	1	1	3		2	1	1	1		10	38	2	40	50	42	39	4	3
South Louisiana	6	3	†	2		1		1		13	10	1	11	24	24	47	14	21
Michigan	9	1	1				4			15	79	7	86	101	93	88	14	10
Mississippi	1									1	11		11	12	12	16	1	
Missouri	1									1	5		5	6	6		1	
Montana			1							1	2		2	3	2			
Nebraska																10		
New Mexico							1		1	2	26		26	28	27	14	1	5
Oklahoma	14	2	5				6		1	28	127	1	128	156	149	143	22	34
Texas	52	13	14	7		1	9	2	1	99	438	19	457	556	521	609	83	118
East Texas Border Counties			1						1	2	3		3	5	3	3		1
Rest of East Texas	3	1					2			6	41	1	42	48	47	48	6	4
North Texas	17	7								24	107	2	109	133	131	131	24	20
West Central Texas	7	1					2			10	44	1	45	55	54	76	10	15
West Texas	7	1	1				1	1		11	37	1	38	49	47	80	10	15
Texas Panhandle											1		1	1	1			
Gulf Coast, Upper	5	1	7	1						14	35	1	36	50	42	50	7	17
Gulf Coast, Lower	7	2	2	6		1	3	1		22	67	7	74	96	86	98	19	34
Southwest Texas	6		2				1			9	75	6	81	90	82	87	7	9
South Central Texas			1							1	28		28	29	28	36		3
Wyoming	1	3	3							7	2		2	9	6	4	4	3
Total United States:																		
First Half of 1943	133	51	57	10	2	3	24	4	5	289 †224	1,279	34	1,313 ††1,279	1,602	1,503	1,519	224	281
First Half of 1942	161	86	*	5	1	*	20	8	*	†281	1,238	*	††1,238	....	1,519	....	281	....
Percent Change	—17.3	—40.6	.....	+100.0	+100.0	.....	+20.0	—50.0	.....	†—20.2	+3.3	.....	††+3.3	.....	—1.0	.....	—20.2	.....

* Data on semi-wildcats not available for 1942. † Exclusive of semi-wildcat or extension tests.

productive in the initial half of 1942.

In spite of the barely changed total volume of wildcat completions, there were material declines in oil discoveries in the first 6 months of 1943 compared with those months of 1942, although gas discoveries showed no decline. New oil fields found in this year's first half totaled 133 against 161 last year, a decrease of 17 percent, while discoveries of new oil horizons were off to 51 from 86, a decline of 41 percent. Distillate discoveries rose to 10 from 5 and new distillate pays to 2 from 1. New gas fields totaled 24 against 20, but new gas pays were off to 4 from 8.

Strictly from the standpoint of finding new potential sources of oil and gas to be developed in lieu of the reserves that were being depleted through current production in the meantime, and without consideration of the mentioned urgent need for bolstering current producing ability, there was fair success in the exploratory development of the first half of 1943, as might be expected from the near-record trend of wildcat completions. The country currently is consuming and taking from the ground around 1,500,000,000 barrels of crude oil per year, or about 750,000,000 barrels in a half year; and the new sources of production found in the first 6 months of 1943 conceivably may yield ultimately about the latter amount of oil, when fully developed and finally depleted. In such event, the industry found as much new oil as it took out of previously known reserves.

This figure of possibly 700 or 750 millions of barrels of crude reserves that ultimately may result from January-June, 1943, discoveries represents a maximum or most liberal estimate, based on consideration of the types of fields found, their locations and similarity to other fields, geophysical and geological data, and other available information.

Cutting of estimates down to very conservative figures indicates that the discoveries of the first half of 1943 might yield ultimately no more than about 350 millions of barrels of oil, or half of the volume that was taken from the ground while the discoveries were being made.

Major Discoveries of 1943

While much of the potential new oil production made available through 1943 discoveries will come from numerous small fields, the half year's wildcatting uncovered a fair number of possible major sources of oil—reserves of around 20 million barrels or more. There were nearly a dozen of such discoveries, located in California, West Texas, East Texas, and the Texas Gulf Coast.

California's most important discovery was the Guijarral Hills field, Fresno County, an Eocene shoreline accumulation, probably smaller than but similar to the neighboring Coalinga Nose field. This field may represent a reserve of 25 to 50 million barrels. Another apparently important California discovery is the producing area in the Midway-Sunset field, which is either a ½-mile northwest extension to the small but prolific Republic pool or an entirely new field. The Republic pool already has produced 11 million barrels from only 73 acres, or 150,000 barrels per acre, and if this new field is similarly productive from 50 to 100 acres, it will produce up to 15 million barrels.

Important discoveries of the Texas Gulf Coast this year have been the 2-mile extension of the Stowell field, Jefferson County, and the opening of the Hall's Bayou field, Brazoria County, on a long-known geophysical prospect.

East Texas unquestionably has come forward with another major field at New Hope, Franklin County. The field was a first-class discovery even on the basis of production from Travis Peak at 8100 feet, and it gained even higher standing when it yielded similar production from the Rodessa sand at 7300 feet.

West Texas has gained this year at least four probable major sources of production. The Russell field, Gaines County, 4½ miles southwest of the Wasson field, has prospects of a large producing area for the Clear Fork lime (Permian), found at 7700 feet. The other three discoveries in the district are all in Winkler County, and all are producing from deep Ellenburger dolomite of the Ordovician. Magnolia Petroleum Company discovered a new field in completing J. B. Walton-State 20 in the Ellenburger at 10,707 feet; and Stanolind Oil & Gas Company and Shell Oil Company opened the Wheeler-Ellenburger field with production from the Ellenburger at 10,647-10,697 feet. The other Ellenburger discovery in Winkler County was the finding of that pay in the large Keystone field by Amon G. Carter at 9655 feet.

Details on the discoveries of the first half of 1943 have been published monthly in this publication. Discoveries of January were published on February 22, page 11; for February on March 22, page 13, for March on April 19, page 11, for April on May 17, page 9, for May on June 21, page 11, and for June on July 19, page 13.

No First Rate Michigan Fields

Wildcatting was intensified in Michigan during the first half of 1943 over the like period of 1942, with a number of promising prospects uncovered but none that could be classified as of first-rate importance. Statistically Michigan delivered 9 oil discoveries, 1 new horizon oil discovery, 1 oil field extension, 4 shallow gas discoveries, and 86 failures out of the total of 101 wildcat completions. There were 9 oil discoveries, no gas discoveries and 73 failures during the first half of 1942.

At the end of June, 5 producers was the greatest number developed in any of the new pools, and in 7 of the prospects the discovery was the only producer.

Michigan produced about 10½ million barrels of oil the first half of the year while extensions and new discoveries by the most liberal estimates did not add more than 7 million barrels to previously recognized reserves.

The Woodville pool in Newaygo County, first for the county, and the Cedar pool in Osceola County, appeared the best of the new areas, but these had been confined by dry holes or showed structure dips to apparently limit them from anything more than small reserves. Aetna-Prosper pool in Missaukee County, discovered in 1942, in early spring loomed as an important find, but now with 10 wells, the area probably will not cover 1000 acres, with all but one flank defined.

Drilling in the 1942-discovered pools, Fork in Mecosta County and Evart in Osceola County, has materially enlarged the early estimates on producing acreage, but both are still comparatively small, ranging from 600 to 1200 acres.

Michigan has been drawing more than 50 percent of its production from the Reed City and Roscommon fields, pools developed in 1941, and new discoveries so far this year have fallen far short of meeting declines started or impending in these pools.

With its handicap of a thick glacial drift, comparatively small structures, and little if any assistance from geophysics, the state requires intensive drilling to find pools. The most encouraging outlook now is that intensive exploration is underway. Several companies now are operating core drilling rigs and contributing to deep tests with independents. More new companies have entered the state the past six months than in the previous three years, with a definite exploration program.

Kentucky in Limelight

During the first six months of 1943 continuous new discoveries in Western Kentucky stole much of the limelight from the more spectacular production in Illinois and Indiana. Half a dozen new fields were found in the eight-county area known as Western Kentucky, and a survey among operators, seems to indicate drilling operations will be stepped up even further during the last six months of the year.

Most of the new production in Kentucky is in the Cypress sand, at about

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2300 feet, with the wells initialing from 100 to 200 barrels a day.

Most spectacular field of the year is the Smith Mills pool of Henderson County—a discovery about two years old—which now has 60 producing wells for a combined daily production of 10,000 barrels. Nearly all the wells are producing from the Cypress, but a few wells on the edge of the pool are small producers from the McClosky.

Illinois Gains New Reserves

Illinois gained a substantial amount of reserves during the first 6 months of 1943, despite the fact that exploration was less active than in the first half of 1942. The oil found was of considerable importance in the aggregate, although there were no outstanding discoveries; the prospecting in the state having yielded numerous new fields, new pays in established fields, and extensions to many fields. The half year's wildcatting netted 10 new oil fields, 21 new oil pays, 10 oil field extensions, and 1 new gas field, a total of 51 productive wildcats out of a total of 217 completed—better than average results. For the latter half of this year, there is indicated a continuance of the comparatively aggressive wildcatting in the state.

Indiana Finds Some Oil

Practically the same number of wildcats were drilled in Indiana in the first half of 1943 as in the similar period of 1942, and the rewards included 2 new oil fields and extensions to 4 fields, out of 41 wildcats completed.

Kansas Strikes Poor to Good

The Kansas picture for the first half of this year was brighter than that in 1942 on the basis of new discoveries. Several more discoveries are on file than were found in the first six months of last year, this year's records including 27 new oil fields, 3 new oil pays, and 2 oil field extensions—32 successful wildcats out of a total of 223 completed.

One of the best discoveries, in view of its influence on future drilling, was by Champlin Refining Company in Barber County. A Viola-lime producer, the well flowed 928 barrels in less than 8 hours and as a result may have an important bearing on Kansas production as well as on drilling.

In Sheridan County, Union Oil Company of California opened a new pool in a large unexplored area. The discovery was a large producer from Kansas City lime, and although the second test was not as good as the discovery, the area likely will witness a steady campaign of drilling.

The linking of the Zenith and Peace Creek pools, and the Carmi and North Iuka pools augers well for increased production and steady development.

Oklahoma's Discoveries Mediocre

Twenty-eight discoveries were recorded in Oklahoma during the first six months of this year, two less than in the same period last year.

These discoveries included 14 new oil pools, 6 new gas pools, 2 new pay zones in old areas, and extensions to 5 oil fields and 1 gas field. None of the discoveries was sensational."

Probably the most important as far as production is concerned are the Cromwell sand strikes in Hughes and Okfuskee counties. Midco Oil Corporation and McIntyre, Sherman and Cummings' almost simultaneous discoveries in Okfuskee County gave promise of fairly large area for exploration, and with production adding materially to the Oklahoma picture. The same is true to a lesser degree of Deep Rock Oil Corporation's Hughes County strike.

Ace Gutowsky's Hunton-lime discovery in Oklahoma County, where the new West Edmond field was opened, probably will provide a great stimulant for exploration in the area, despite the fact that the reserve provision and structural condition present at the discovery are controversial.

A Washita County discovery in Western Oklahoma and a discovery in Cimarron County in the Oklahoma Panhandle also are expected to spark new drilling on that side of the state.

Arkansas Is Inactive

Beginning the last half of 1943, Arkansas wildcat drilling was at a low ebb, with only 9 wildcat tests active on July 1. Several new pays and extensions and 2 small new oil areas were the only successful results of development during the first half of 1943.

Near Rainbow and East El Dorado, an old shallow area in Union County, productive new pay sands were found in Tokio and Travis Peak zones. Nick Springs gained a Cotton Valley pumper. An intense drilling campaign gained a shallow pumper of heavy oil for Calhoun County.

On July 1, a major extension of Smackover lime production was recorded for the Atlanta field and will add to the Arkansas reserve. In addition, this extension found prolific pay sand in the Cotton Valley. It immediately attracted offset drilling. Extensions to already productive fields, dual completions, and more wildcat exploration should help to bolster the Arkansas reserve during the last half of 1943.

Much Work in Mississippi

Mississippi counted 2 deep Tuscaloosa discoveries for the first six months of 1943 and then immediately focused interest on widely separated areas in the state. More than 20 heavy rigs were in operation in various isolated spots. Geophysical activity reached a high greater in Mississippi and the southeast Gulf States than at any time since 1940.

Two Mississippi counties, Adams and Lincoln, furnished deep Tuscaloosa strikes below 10,000 feet, first production there, and present Adams County wildcat reports a promising Wilcox showing. This horizon has not been productive in Mississippi and should create a revival of that play. A wildcat prospecting in an isolated area in Wayne County in southeast Mississippi reported a show in both the Eutaw and the Tuscaloosa horizons and the remaining six months certainly will bring active development there.

North Louisiana Results Poor

The discovery rate for the past six months in North Louisiana was very limited. The outlook for future drilling in that district is bright, however, and 41 wildcats currently are active. These wildcats are looking for deep pay zones in shallow producing areas, drilling on familiar trends, and searching for new provinces in the district.

Two deep Tuscaloosa ventures drilled at Lake St. John to 9000 feet, yielding prolific gas-distillate flow, indicated a reserve there. Attention for this deep horizon's prospects are focused on a wide sweeping play from Concordia Parish, across Mississippi and into the southeast gulf states.

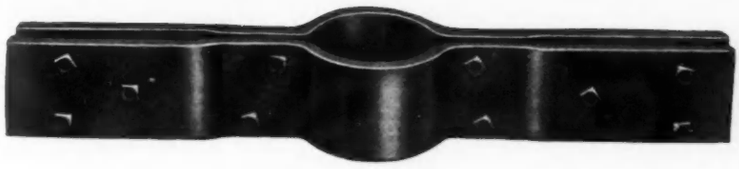
The Pettit lime, for which drilling activity was accentuated early this year, is being developed at Lucky, Bienville Parish. Additional drilling will evaluate this gas-distillate field. It is southwest from the Pettit lime field at Bear Creek.

At southeast Sugar Creek in Claiborne Parish, a recent fault line play oil production is confined to Roy Lee, Trustee's W. J. Byrd 1, which flowed more than 1000 barrels of oil in a 24-hour test in April from Ozley sand in Travis Peak. Offsets surrounding this oil producer were tested for gas-distillate and were closed in, due to spacing regulations for the field.

The wildcatting record in South Louisiana during the first six months of 1943 was substantially better than that in the corresponding period of last year, with 7 new oil field discoveries, 7 new pays, and 1 major extension.

There has not been a splurge of wildcat drilling, most of the wells having been drilled by larger companies. Leasing has been moving at an accelerated pace, with the prospect that many wells will be drilled within the near future if sufficient materials are made available.

The new fields are Napoleonville,



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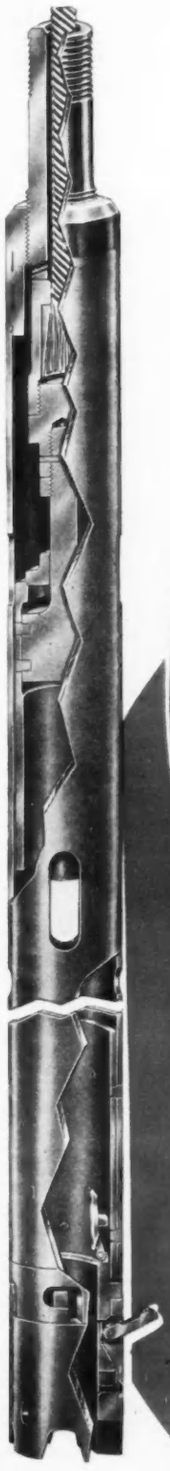

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Shuteston, Pecan Island, Bear, St. James, Perkins, and Egan. None of these has indications of being a major oil reserve, although some may be large. Napoleonville is a large salt dome, with oil opened on the flank. Pecan Island and St. James produce gas-distillate, while the Bear field so far has indications of developing into a large field from an acreage viewpoint.

Of the new fields, drilling probably will be more rapid at Bear, Perkins, and Egan, where the pay is not exceptionally deep and where the leases are scattered among several companies.

Three Fields in East Texas

The East Texas basin gained 1 important oil pool in recording a trio of oil discoveries and 2 gas strikes. This development may be supplemented by oil discoveries from Paluxy in Smith County and from Woodbine in Wood County, as both prospects will be plugged back to try for completion after fulfilling depth contracts.

The banner completion was Tide Water Associated Oil Company and Seaboard Oil Company's Bacon 1, New Hope geophysical prospect, Franklin County, flowing high-gravity oil from Rodessa and Travis Peak zones. It is the district's first dual-completion discovery. The partnership controls the area, but will operate 2 or more rigs continuously.

The Paluxy formation contributed a pumping discovery in east Hunt County, and a flowing well in Wood County, giving the latter its third Paluxy producing area. Predominance of water discounts the importance of the Hunt County strike, while the Wood County area, designated as Manziel pool, is apparently void of flush production.

Field activity centered largely upon the Quitman and Hawkins areas, Wood County, and the former will remain active during the last half of the year. Wildcatting will continue at a brisk pace, as enlarged geophysical operations are uncovering new deep prospects.

Upper Texas Gulf Coast

Wildcatters opened 5 new oil and gas fields on the Texas Gulf Coast in the first six months of 1943, a big decrease from 11 fields opened in the same period of 1942. There were 2 new pays opened and 7 major extensions.

Two of the new discoveries were on the Wilcox trend, which is being drilled more and more on the upper portion of the Coast. They were at Pinehurst and Ramsey. Another discovery, believed to be a major one, is at Halls Bayou in Brazoria County, although sufficient wells have not been drilled to tell the size of the structure.

The most important developments, from one point of view, were three major extensions: Hitchcock, Old Ocean, and Stowell. These three extensions added thousands of additional acres to production and millions of barrels of oil to the reserves.

The Stowell field of Jefferson County was extended north and east two miles to become the most important extension of the three. Due to split-up leaseholds, drilling has been fairly active and will continue to be so until the reserve is drilled up. The field has at least four pay horizons, and in recent weeks operators have been effecting dual completions.

Southwest Texas Discoveries

Although there were fewer discoveries in Southwest Texas in the first 6 months of 1943 than in the like period of 1942, the quality of the new fields has been superior. For the whole district, including Corpus Christi, Laredo, and San Antonio areas, 19 new oil fields were opened, 4 new gas fields, 3 new pays and 6 major extensions. The number of fields compares with 21 for the first half of last year. The list of new pays compares with 23 for the same period in 1942, this factor alone indicating less field drilling and more wildcatting.

Drilling has been considerably less, but more wildcatting has taken place, although not as much as in previous years.

The most important development in Southwest Texas was the intensified interest in development of the Carrizo-Wilcox prospects, this trend alone counting for half of the new discoveries. Development was more active in Karnes County, with 4 new fields, while 2 new pools were opened in Goliad County, and 1 each in Bee and Live Oak counties.

Karnes County was the center of Carrizo-Wilcox development, which gradually spread to adjoining areas. It is believed that the largest discovery in the Wilcox so far in the district was made by Continental Oil Company in the old Slick field area of Goliad County. Sand conditions in the discovery wildcat were found to be very thick and prolific, part of the sands being gas-distillate and a big portion yielding oil.

This area is experiencing a brisk wildcatting campaign, based upon recent discoveries, and no doubt more fields will be tapped before the year is out. The sands are not too deep, ranging from 5000 feet to 7000 feet, depending on how far updip the well is drilled. The lease situations are desirable in most instances, and thus one can expect considerable drilling along the Wilcox within the next few months.

Although the Carrizo-Wilcox yielded the largest amount of new reserves, the Oligocene sands also contributed to the new discovery rate. Nueces and Duval counties were active from flank developments, with Agua Dulce showing new pays, and a new field was opened in Duval.

Numerous North Texas Strikes

Prospecting in North Texas accounted for 17 new oil areas, and 7 established pools and fields gained new oil producing horizons. The majority of these strikes are unimportant. The outstanding development when measured in terms of added acreage and wells involved the finding of the productive Winger sand, Basal Strawn, on the east flank of the Walnut Bend field, Cooke County, by Sinclair Prairie Oil Company. Nine wells on 40-acre units have been completed since the mid-January discovery, and more rigs are currently in service than any other field in the district.

Development of the other productive areas added has not progressed sufficiently to ascertain their merit from standpoint of reserves. Phillips Petroleum Company reaped its first return from extensive deep wildcatting in Archer County in opening the Little Wichita pool with a flowing well in Bend. Clay County gained a new Mississippian lime pool through efforts of Continental Oil Company and W. B. Omohundro's Stephens 1, which is expected to embrace sizable producing area, although pools involving this zone have never exceeded 10 wells. In Jack County, Standard Oil Company of Texas and Hanlon & Buchanan uncovered the McDonald and Peek pools, producing from Strawn and Bend, respectively, while Shell Oil Company scored a small well from Bend at Wolfe 1, which has not been offset.

Continental Oil Company brightened Montague County's production outlook in establishing shallower pays in the Hildreth, Mueller and Illinois Bend areas, all being more attractive than the original pays. This county gained a new pool through completion of Sinclair Prairie Oil Company's Denver prospect as a pumper after a long delay. In Young County, Anderson-Prichard Oil Corporation and Col-Tex Refining Company's Latimer 1 established a new oil pool from Bend, and new oil levels were proved in Allar and Anzac-Graham pools. Wilbarger County recorded its deepest producers when British-American Oil Producing Company's Wilkinson 1 opened a new pool from Basal Pennsylvanian. The latter may embrace a large structure.

New pools and pays along with attractive undrilled sites in the older producing areas assures continued active

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BAROID or COLOX—Muds suitably weighted with these materials hold caving or heaving formations in place.

STABILITE—This superior chemical mud thinner reduces viscosity and gel-strength and improves walling qualities.

BAROID or COLOX—Highly necessary to confine gas and other pressures.

AQUAGEL—Always carry a sufficient amount in all muds to keep water loss low and cake thin.

STABILITE—Reduces danger of blowouts by freeing entrained gas, thereby keeping mud weight constant.

SMENTOX—When drilling ahead after a cement job, SMENTOX counteracts the effect of cement in mud. A small amount added to mud after a cement job often eliminates necessity of discarding mud.

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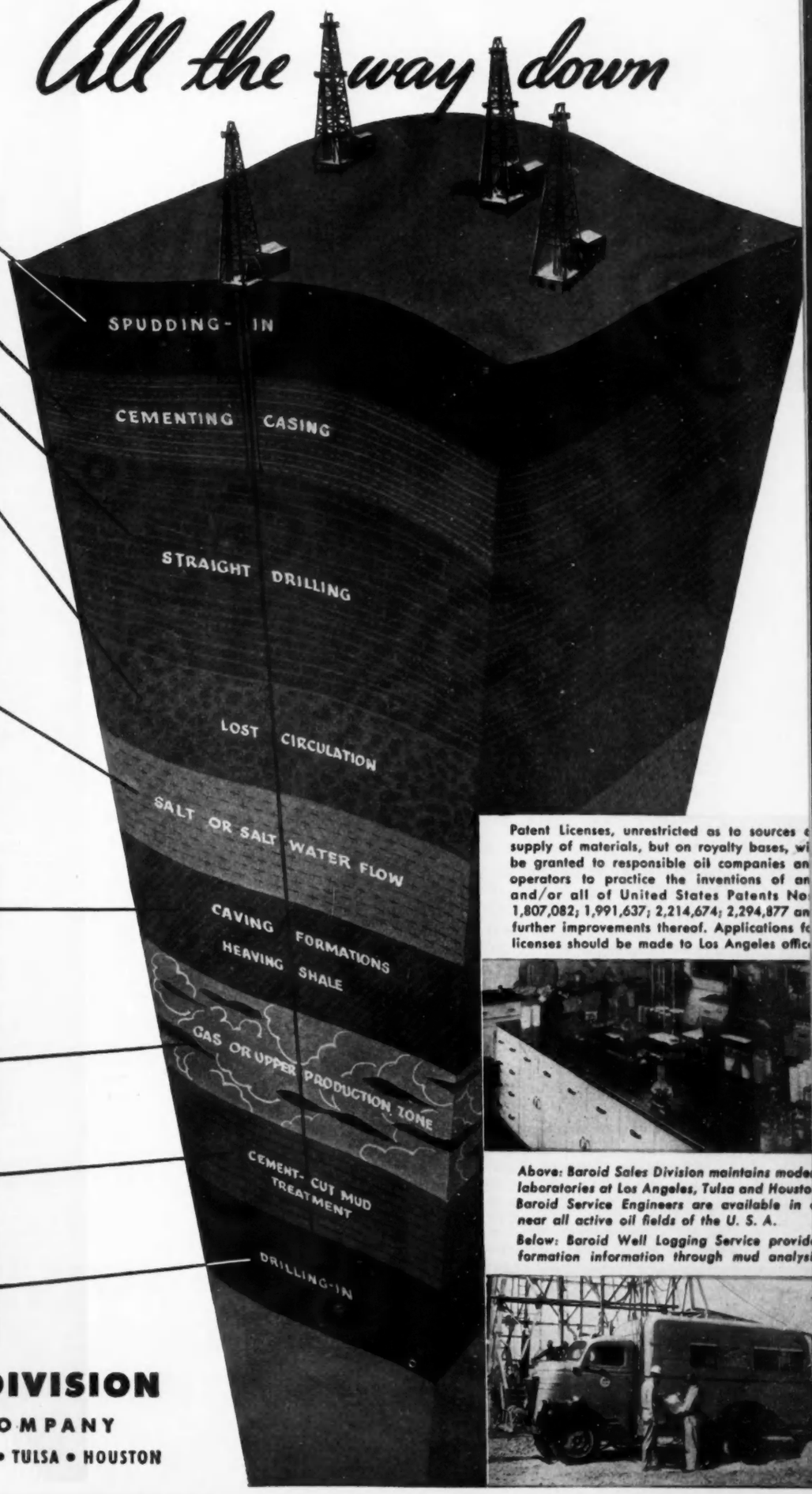

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operations throughout the district, while extensive geophysical surveying heralds an increase in deep prospecting.

West Central Texas

West Central Texas accounted for 7 oil pools and 2 gas areas, while a new oil zone was uncovered in an established pool. Three of the strikes may attain importance, including Ben F. Read, Trustee's Corbett 1, prolific natural producer from Marble Falls in northeastern Stephens County. Texas Pacific Coal & Oil Company's deep explorations in the Hill field, Stephens County, recorded 2 productive Mississippi lime wells then a third test missed the pay, leaving the importance of this zone in doubt. In Jones County, Fain-McGaha et al opened the Patterson pool with a pumper from the Flippen, first possible pay zone in the area, which is within a trend of multi-pay pools.

The relaxing of spacing rules by PAW will be reflected by an upturn in development of shallow areas, particularly the multi-pay Wimberly field, Jones County, where about 30 additional wells are to be drilled.

Texas Panhandle Active

The advance of crude prices in the Texas Panhandle to parity with the Mid-Continent has been reflected by increased field activity. Development is restricted to old areas opened some years ago, and no discoveries or important extensions occurred the past six months. Drilling in gas areas has been greatly curtailed due to PAW restrictions. Wildcatting is being revived in outlying counties, and a majority of the tests will proceed to Ordovician zones.

West Texas Gets Deep Fields

Ordovician zones enabled West Texas to attain prominent position as contributor of new crude reserves during first half of 1943, with three consecutive major oil strikes in Winkler County, which had not previously received a deep test. The district accounted for 7 oil and 1 gas area, and the proving of a deep pay in the Keystone field. Pending discoveries involved 2 Ordovician prospects in Pecos County, and a Holt lime strike in Andrews County.

The opening of the Kermit-Ellenburger, Keystone-Ellenburger and Wheeler - Ellenburger areas in Winkler County with pay sections considered capable of averaging 1,000,000 barrels of oil per well stimulated trading and explorations along a wide trend, extending from southeastern Pecos County thence north across Ward, Winkler, Andrews and Gaines counties. The Gaines County portion of this trend accounted for the Russell pool, a commercial pumper in Clear Fork. Clear Fork also made its initial appearance on the east side of the basin through the completion of a pumper in northeastern Howard County.

Small oil pumpers established pools in Crane, Crockett, and Runnels counties, while Sutton County scored its first production in completing a gasser.

Ordovician development will progressively increase throughout the district. Participation is confined to financially strong operators due to cost of such deep tests. Drilling is on a contract basis, except for one operator.

Substantial boost in production allowables scheduled for the last quarter through restoration of Humble Pipe Line Company's line to Ingleside to active service, and promise of another big increase early next spring through completion of Stanolind Pipe Line Company's authorized 16-inch carrier to Drumright, Oklahoma, will stimulate drilling in the district, provided the supply of tubular goods is not further curtailed.

Gas Area in New Mexico

New Mexico is the only important oil producing state failing to register an oil discovery during the first half of 1943. However, a gas area, yielding Helium, was opened in San Juan County, while Eddy County has 2 prospective shallow oil discoveries, and a wildcat in western Lea County was also showing for an oil producer at the close of June. Volume of exploratory work in the state remained at comparatively low level throughout the period.

A campaign for production below regular Permian horizons in southeastern New Mexico, centering upon Chaves, Eddy and Lea counties, will assume greater proportions during remainder of year. The proximity of Lea County to recent important deep strikes in Texas materially enhances the outlook for this portion of the state, while the first test to drill to the Ordovician in this county is attempting to make a well in middle Permian after recovering nominal oil shows at deeper levels.

Rocky Mountain Wildcatting

Wyoming furnished the principal developments in wildcatting in the Rocky Mountain region. That state gained new pay horizons in 3 fields and extensions to 3 fields out of 9 wildcats and semi-wildcats completed. Montana scored an extension to 1 oil field. Colorado recorded only 1 wildcat completion, and it was a dry hole.

California Exploration Disappointing

Exploratory drilling in California, after a discouraging start at the beginning of the year and an even more marked wavering during a waiting period that preceded confirmation of a price increase for heavy oil, recently began to approach at least a normal level.

On a year-to-year comparison, through recent years, 1943 wildcat results are holding up well. The amount of reserves obtained per foot of hole drilled is higher than in recent years. Estimates of the total addition to oil reserves from 1943 discoveries, new fields, plus new pays, range between 35 and 50 million barrels. More conservative appraisals fall considerably below those figures. Gas discoveries, new fields, and new pays, vied with oil drilling for a place of first importance; and it is entirely possible that the year's gas finds surpassed the oil discoveries in intrinsic value.

Guijarral Hills, in Fresno County, continues to be ranked as the discovery of a new oil field of major importance. Developments in the area have provided no reason to reduce early recovery estimates of around 20 million barrels. The other find to be classed a new field opener, in Wheatville area, later may be proved of considerable importance; but, because its production is from a thin streak of sand and being in a general region where returns from neighboring wells vary widely, there is no dependable clue as to possible extent of the accumulation. Accordingly estimates have been restricted to a nominal 200,000 barrels for a single well.

New oil pays in producing fields during the first six months this year might ultimately prove up in an aggregate equal to, or greater than, that of the virgin field discoveries. The Bering deep zone, Del Valle field, Los Angeles County, has given impressive performance in the discovery well, and tests to delineate its direction and extent are awaited. This find was given possibilities of 1 to 10 million barrels at discovery. The other new pay discovery of high promise, made only a few weeks ago, has been carried as an extension of Republic pool, Midway-Sunset field, Kern County. As a matter of fact there is strong evidence to support the belief in some quarters that this find is an opener of a separate field. In the event it turns out to be a field, estimates of ultimate recovery very justifiably could be raised to levels representing a discovery of possible major importance. Pending further drilling most authorities agree that the find can be given a preliminary evaluation of around 10 million barrels.

The outlook for further wildcatting this year is beclouded. Just now exploration interest is on the upgrade, with a goodly array of tentative wildcat ventures in various stages of preparation. But the bugaboo of high discovery costs still has to be dealt with.

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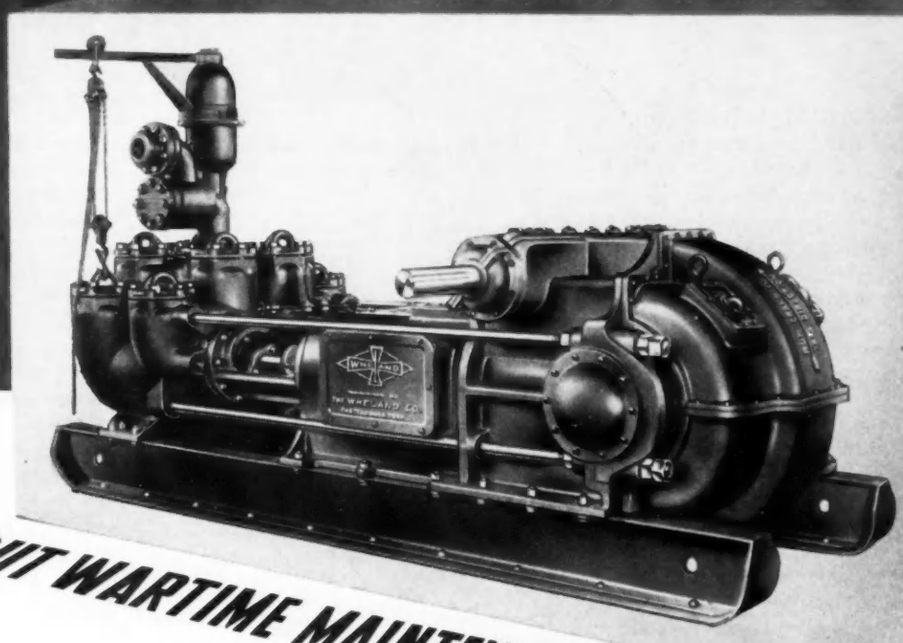

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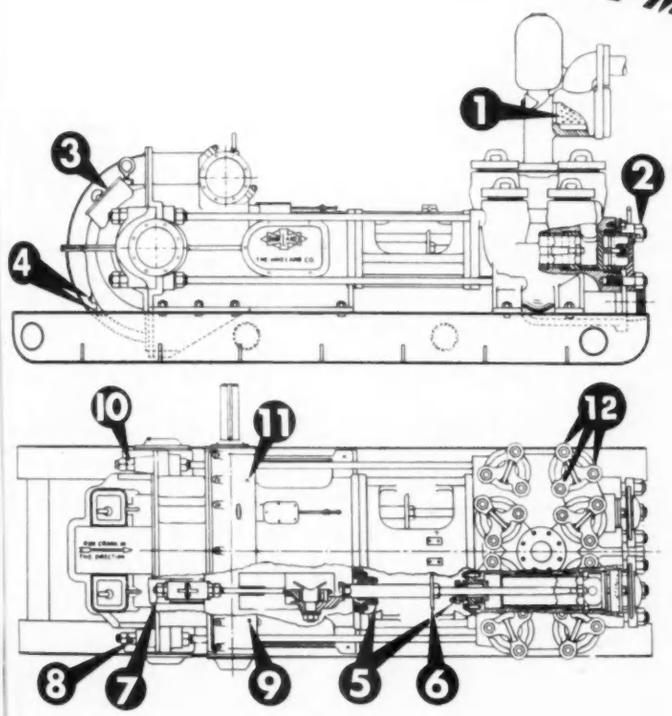

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5. Stuffing boxes, keep them well packed.
6. Baffles, keep them in place. They will help keep mud out of power end.
7. Connecting rod nuts and crank bolts should be inspected weekly.
8, 9, 10 and 11 — Grease fittings, grease each tour.
12. Tighten all water cylinder valve pot cover nuts evenly so that no strain will be left on any one of them.

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Footage Off More Than Completions As Wells Are Shallower

GEOGRAPHICAL shifts in drilling toward shallower areas and intensified development of shallower, heavy oil fields have been responsible for reduced average drilling depths in the United States this year and a greater decline in footage drilled than in the number of wells completed.

As compared with an average depth of 3122 feet for wells completed in the first 6 months of last year, the depth averaged only 3043 feet for the completions in the corresponding months of this year. Consequently, while the number of completions was off 22 percent, the footage involved was down 24 percent. There were 8695 completions in this year's first half against 11,157 last year, and footage totaled 26,457,302 against 34,828,603.

The industry is carrying on comparatively heavy drilling in districts nearest to the Atlantic Coast shortage area, where depths involved are relatively shallow, while holding development to a minimum in the districts of the Southwest, where drilling as a rule is comparatively deep.

Average Drilling Depths

YEAR	Wells Completed	Footage Drilled	Average Depth per Well
1925	25,406	73,677,400	2900
1926	28,995	81,186,000	2800
1927	22,301	66,903,000	3000
1928	19,964	59,892,000	3000
1929	23,463	67,925,285	2895
1930	19,848	57,557,200	2900
1931	11,716	34,259,110	2924
1932	14,290	43,033,422	3011
1933	13,145	38,464,500	2926
1934	20,793	55,103,538	2650
1935	24,273	66,632,035	2745
1936	28,546	80,068,851	2805
1937	33,945	101,105,230	2979
1938	28,060	87,841,493	3131
1939	27,658	84,114,990	3037
1940	30,656	93,971,162	3065
1941	32,210	95,452,534	2963
1942	21,412	65,056,261	3038
First 6 Months:			
1941	14,444	43,155,572	2987
1942	11,157	34,828,603	3122
1943	8,695	26,457,302	3043

At the same time, the industry has more urgent need for heavier crudes than for lighter oils, because of supplying increased volumes of fuel oils and reduced volumes of gasoline. Therefore, it is concentrating drilling particularly in shallower, heavy crude fields, with the result that the trends of footage drilled have not been in line with trends of well completions. California is an outstanding example, that state having had nearly twice as many completions in the first half of 1943 as in the corresponding period of 1942, while at the same time registering only about one fifth more footage, because the average drilling depth was cut almost in half.

The Louisiana Gulf Coast remains the world's leading deep drilling district, with wide-scale development showing for the first half of this year an average depth of 9087 feet per well. The upper Gulf Coast of Texas ranks second, with an average depth of 7721 feet for 142 wells completed in the first 6 months of 1943, while the lower Texas Coast is third with an average of 5939 feet per well. Arkansas and Mississippi are areas of mile-deep average drilling, but while California also was in that class last year, its wells this year have averaged only 3266 feet in depth.

Footage and Average Depths Drilled, by States and Districts

STATE OR DISTRICT	COMPLETIONS First Half of Year			Percent Change	FOOTAGE DRILLED First Half of Year			Percent Change	AVERAGE DEPTH First Half of Year		
	1941	1942	1943	1942-1943	1941	1942	1943	1942-1943	1941	1942	1943
Alabama	1	3	1	— 66.6	305	4,697	5,717	+ 21.8	305	1,565	5,717
Arkansas	89	99	112	+ 13.1	326,999	538,758	586,942	+ 8.9	4,087	5,442	5,241
California	533	386	742	+ 92.2	3,069,795	1,990,691	2,423,512	+ 21.7	5,759	5,157	3,266
Colorado	8	5	10	+100.0	22,219	29,718	30,339	+ 2.0	2,777	5,944	3,034
Georgia	1	2	1	— 50.0	1,501	6,519	1,240	— 80.9	1,501	3,259	1,240
Illinois	1,658	931	814	— 12.5	3,727,190	2,322,943	1,990,384	— 14.2	2,248	2,495	2,445
Indiana	250	194	119	— 38.6	490,843	319,876	203,130	— 36.4	1,963	1,648	1,707
Iowa	2				6,274				3,137		
Kansas	1,043	789	777	— 1.5	3,130,084	2,369,117	2,579,207	+ 8.8	3,001	3,003	3,319
Kentucky	146	72	145	+101.3	159,039	97,741	291,639	+200.0	1,089	1,357	2,011
Louisiana	670	515	300	— 41.7	4,010,284	3,391,135	2,092,182	— 38.3	5,985	6,584	6,974
North Louisiana	243	231	132	— 42.8	714,009	906,712	565,528	— 37.6	2,938	3,925	4,284
South Louisiana	427	284	168	— 40.8	3,296,275	2,484,423	1,526,654	— 38.5	7,719	8,748	9,087
Michigan	387	345	241	— 30.1	794,248	879,212	631,151	— 28.2	2,052	2,548	2,619
Mississippi	86	65	18	— 72.3	418,268	337,137	96,887	— 71.5	4,864	5,186	5,383
Missouri	32	16	10	— 37.5	25,617	7,522	8,863	+ 17.8	801	470	886
Montana	98	83	106	+ 27.7	214,026	195,964	219,569	+ 12.3	2,184	2,361	2,071
Nebraska	41	25			91,815	57,240			2,239	2,249	
New Mexico	168	204	124	— 39.2	478,390	561,235	364,691	— 35.4	2,847	2,765	2,940
New York	391	572	566	— 1.0	539,624	725,719	781,340	+ 7.7	1,380	1,268	1,380
Ohio	787	539	415	— 23.0	1,402,950	1,241,775	1,059,749	— 14.6	1,782	2,303	2,554
Oklahoma	1,015	757	644	— 14.9	2,605,761	2,215,662	1,891,140	— 14.6	2,567	2,926	2,937
Pennsylvania	1,913	1,979	1,316	— 33.5	3,288,216	3,278,978	2,232,432	— 31.9	1,718	1,657	1,696
Tennessee	9	7	5	— 28.5	13,318	10,317	4,945	— 52 0	1,479	1,473	295
Texas	4,745	3,183	1,886	— 40.7	17,354,883	13,078,517	7,903,211	— 39.5	3,657	4,109	4,190
East Texas Border Counties	13	7	12	+ 71.4	58,568	34,687	74,727	+117.6	4,505	4,955	6,227
East Texas Field	317	15	5	— 66.6	1,144,881	59,771	11,959	— 76.4	3,611	3,384	2,390
Rest of East Texas	254	200	112	— 44.0	1,131,882	980,965	595,620	— 39.2	4,456	4,904	5,318
North Texas	1,143	525	430	— 18.0	2,537,774	1,299,150	1,174,788	— 9.6	2,220	2,474	2,732
West Central Texas	282	201	159	— 20 8	517,491	432,218	352,535	— 18.5	1,835	2,150	2,217
West Texas	985	912	431	— 52.7	4,078,735	3,819,890	1,831,907	— 52.0	4,140	4,188	4,250
Texas Panhandle	276	232	103	— 55.6	832,111	691,347	297,947	— 57.0	3,014	2,979	2,884
Gulf Coast, Upper	371	272	142	— 47.7	2,437,068	1,782,455	1,096,440	— 38.4	6,568	6,553	7,721
Gulf Coast, Lower	587	494	285	— 42.3	3,223,097	2,948,559	1,692,473	— 42.6	5,490	5,969	5,939
Southwest Texas	398	255	174	— 31.7	1,174,185	854,955	686,693	— 19.6	2,950	3,352	3,947
South Central Texas	119	70	33	— 52.8	219,181	183,520	89,031	— 51.3	1,841	2,621	2,698
West Virginia	324	349	284	— 18.6	827,554	1,032,496	810,234	— 21.5	2,554	2,958	2,853
Wyoming	56	37	59	+ 59.4	156,378	133,634	248,888	+ 86.4	2,792	3,611	4,218
Total United States	14,444	11,157	8,695	— 22.0	43,155,572	34,828,603	26,457,302	— 24.0	2,987	3,122	3,043

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Well Completions Drop in 1943; Some Areas More Active

Total drilling is 22 percent under comparative period last year and decline in number of producing oil wells is greater because of less work in known fields

UNDER the wartime materials and manpower conservation program for the oil fields, drilling has been curtailed this year to the lowest rate since the depression year 1933. In the first half of 1943 wells were completed at the rate of about 17,500 per year, which is not very far above the 12,000 to 14,000 completions annually in 1931, 1932 and 1933.

This year's annual completion rate has been not much more than half of the 34,000 wells of 1937 or 32,000 of 1941, and it has been off about 20 percent from the rate for 1942, when 21,500 wells were completed.

In the first 6 months of 1943 there were completed in the United States 8,695 wells, including old wells drilled deeper, or 22 percent less than the 11,157 finished in the corresponding months of 1942.

The decrease in drilling was sharper in proven fields than these totals indicate, as there were practically as many wildcat completions in the first half of this year as there were in the similar period of last year.

While there has been a continuation this year of wide spacing of wells in order to get the maximum new oil producing ability out of materials expended, there has been achieved also a distribution of drilling geographically in accordance with the need for oil from particular districts.

Increased production has been urgently needed on the West Coast, and under relaxation of well-spacing regulations and better crude prices, there has occurred a sharp expansion of drilling in California. That state had almost twice as many well completions in the first half of 1943 as in the like period of 1942, the totals having been, respectively, 742 and 386, with a marked rise in the rate toward the middle of this year. In the second quarter of this year, there were 65 percent more completions than in the initial quarter. The recent stepping up of drilling has indicated that California's well completions for all of 1943 may reach an all-time high. The record for the boom year 1922 was 1493 wells. Probably upwards of 1600 wells will be completed in 1943.

So pronounced has been the trend toward a stampede of drilling in California that it has begun to appear as if reserves of manpower, available equipment, and priorities will be exhausted before the peak is reached.

Aside from the sharp increase in the number of well completions in California, the drilling program in the state this year has been noteworthy in that the development has been concentrated in large degree in relatively shallow, heavy-oil fields, in response to need for residual fuel oil for the Navy and other war purposes. The average drilling depth in California dropped to 3266 feet for the first 6 months of 1943 from 5157 in 1942 and 5759 in 1941. Drilling is concentrated upon development within and along the edges of old, long-drained shallow fields whose yield is the low-gravity oil. The industry, with all the help that PAW can muster for it, is combing over every known source of heavy oil; and incidentally, that campaign is drawing heavily upon financial resources, manpower, and equipment which in normal times would

Wells Completed in the United States in First Half of 1943

State or District	NEW WELLS: For Oil or Gas: Productive: Oil	Gas	Distillate	Total Productive	Dry Holes	Total New for Oil or Gas	Other New Wells: Water Input	Gas Input	Salt Water Disposal	Total New Wells	Old Wells Drilled Deeper	TOTAL COMPLETIONS: First Half 1943	First Half 1942	Percent Change
Alabama					1	1				1		1	3	— 66.6
Arkansas	66	1	2	69	40	109			2	111	1	112	99	+ 13.1
California	519	19		538	192	730				730	12	742	386	+ 92.2
Colorado	5			5	5	10				10		10	5	+100.0
Georgia					1	1				1		1	2	— 50.0
Illinois	465	8		473	304	777		11	2	790	24	814	931	— 12.5
Indiana	43	2		45	70	115				115	4	119	194	— 28.6
Kansas	388	13		401	349	750		2	10	762	15	777	789	— 1.5
Kentucky	83	4		87	56	143		1		144	1	145	72	+101.3
Louisiana	158	18	4	180	120	300				300		300	515	— 41.7
North Louisiana	53	14		67	65	132				132		132	231	— 42.8
South Louisiana	105	4	4	113	55	168				168		168	284	— 40.8
Michigan	95	12		107	128	235				235	6	241	345	— 30.1
Mississippi	6			6	12	18				18		18	65	— 72.3
Missouri	1	2		3	7	10				10		10	16	— 37.5
Montana	63	26		89	17	106				106		106	83	+ 27.7
Nebraska													25	
New Mexico	79	5		84	34	118				118	6	124	204	— 39.2
New York	375	3		378	2	380	186			566		566	572	— 1.0
Ohio	63	214		277	130	407		1		408	7	415	539	— 23.0
Oklahoma	233	54		287	280	567		23	5	595	49	644	757	— 14.9
Pennsylvania	593	133		726	41	767	541			1,308	8	1,316	1,979	— 33.5
Tennessee		2		2	3	5				5		5	7	— 28.6
Texas	926	67	15	1,008	797	1,805	15	1	7	1,828	58	1,886	3,183	— 40.7
E. T. Bor. Co.'s	9			9	3	12				12		12	7	+ 71.4
East Texas Field							1		4	5		5	15	— 66.6
Rest of E. Texas	50	2	3	55	56	111				111	1	112	200	— 44.0
North Texas	161			161	238	399	14		3	416	14	430	525	— 18.0
W. Central Texas	42	8		50	103	153				153	6	159	201	— 20.8
West Texas	320	4		324	80	404				404	27	431	912	— 52.7
Texas Panhandle	61	22		83	13	96				96	7	103	232	— 55.6
G. Coast, Upper	78	3		81	61	142				142		142	272	— 47.7
G. Coast, Lower	147	23	12	182	100	282		1		283	2	285	494	— 42.3
Southwest Texas	54	5		59	114	173				173	1	174	255	— 31.7
S. Central Texas	4			4	29	33				33		33	70	— 52.8
West Virginia	36	189		225	46	271				271	13	284	349	— 18.6
Wyoming	49	1		50	9	59				59		59	37	+ 59.4
Total U. S.:														
First Half of 1943	4,246	773	21	5,040	2,644	7,684	742	39	26	8,491	204	8,695	11,157	— 22.0
First Half of 1942	5,894	877	57	6,828	2,816	9,644	1,090	44	27	10,805	352	11,157	11,157	
Percent Change	—27.9	—11.8	—63.1	—26.1	—6.5	—20.3	—46.9	—11.3	—3.7	—21.4	—42.0	—22.0		

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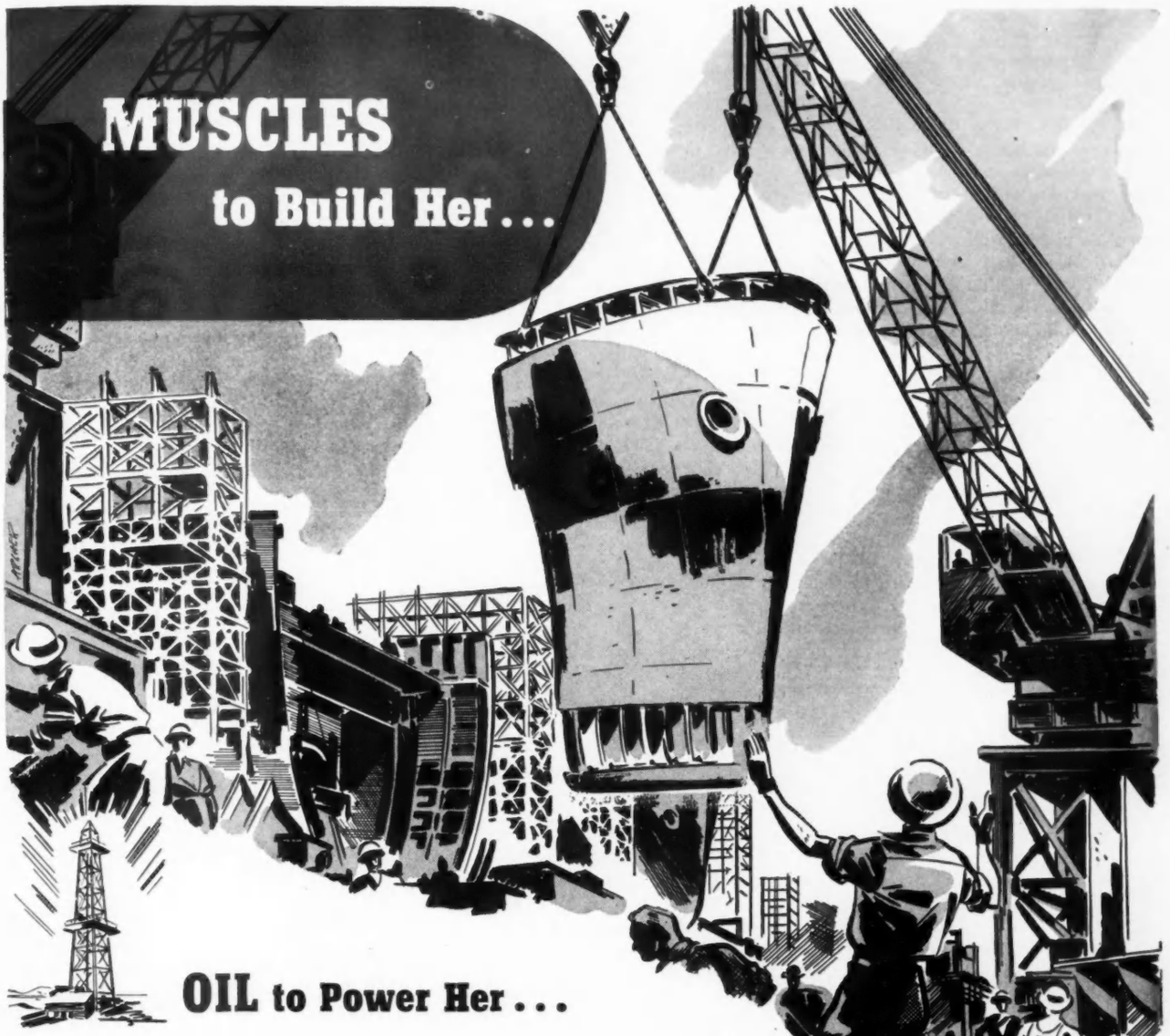

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be channeled to a much greater extent into wildcatting and the expansion of the more prolific production in high-gravity fields.

Suggestive of the drilling load that California operators must shoulder the rest of this year are American Petroleum Institute figures in an early May survey which showed that it had taken twice as many wells in California in 1943 to obtain half as much new production as in the like period of 1942.

Despite a virtual doubling of the rate of well completions in the state, California's daily production and capacity to produce have failed to attain levels that PAW regards as necessary for safety in prosecution of the war in the Pacific. Demands which last year it was hoped could be met with current production still are being filled only with heavy draft on storage plus some imports. Daily production in December of last year was 773,850 barrels, and 5 months later, after hundreds of new wells had been brought in, the daily average (May) was 773,444. No headway at all had been made. All the supply from new sources has not been enough even to offset natural decline of existing wells. The explanation is in the size of potentials of the wells drilled this year; they average far below those of any former year. The California per-well average so far in 1943 is only 76 barrels, on the basis of estimated 6 months' efficient maximum production. For all of last year, the average on a basis of initial potentials, was 774 barrels a day.

Although not enough to meet current demand from daily production, California's 1943 output is running at a high level. If, as presently estimated, the whole year's production exceeds 280,000,000 barrels, that total will be the largest, with the exception of 1929, for any year in history.

Aside from Calirofnia, the states which have been called upon most urgently for new fields and new wells are those of PAW Districts 1 and 2—the East and the Middle West and Mid-Continent. In those states any and all kinds of crude are welcomed, and there has been some relaxation of restrictions on drilling. But wildcatting results have been only mediocre, despite comparatively large numbers of exploratory tests completed, and relatively few new fields of major importance have been made available for development. Consequently, in most of the states of the two districts, there were fewer completions in the first half of 1943 than in the like period of 1942. Kentucky is an exception, having had twice as many completions this year, in response to noteworthy success in finding new fields.

Illinois drilling has held up comparatively well, having run only 12.5 percent lower than last year, compared with the national decrease of 22 percent. Illinois has had no spectacular discoveries, but has had a substantial number of discoveries of small new fields, new pay horizons, and extensions to established fields.

Indiana has made a less impressive showing, completions having dropped off 28 percent from last year, because of a dearth of discoveries.

Michigan also has had disappointing exploration results, and 30 percent fewer wells were completed in the first half of this year than in that period of last year.

New York's completions have run nearly the same this year as last, but there have been declines of 33 percent in Pennsylvania, 18 percent in West Virginia, and 23 percent in Ohio.

Called upon for more oil to help supply the East, Kansas has maintained drilling practically at the levels of last year, having shown a decrease of only 1.5 percent in the rate of completions. But Oklahoma has registered a 15 percent decrease. Arkansas has had a 13-percent increase in field work, but North Louisiana a 43-percent decline, with discoveries few and unimpressive. Mississippi has reverted largely to wildcat drilling, with its several established fields developed and on the road to depletion.

Texas recorded 41 percent fewer completions in the first half of this year than in the like period of last year, a sharp decrease ond one much greater than the national decline. All districts of the state have experienced large decreases, with development cut in half in some of them, including West Texas, the Panhandle, Eastern Texas, the Gulf Coast, and South Central Texas. North and West Central Texas and Southwest Texas have had the smallest decreases in completions.

South Louisiana was handicapped in getting materials by the great depth of its fields, while markets were limited by the shipping situation, with the result that the district had 41 percent fewer completions in the first 6 months of this year than in the corresponding months last year.

The Rocky Mountain states have experienced strong demand for crude, in reflection of wartime activity in that region and in helping to supply the Pacific Northwest and other areas normally supplied by California. Several Wyoming fields gained new pay horizons or extensions, and that state had 59 percent more completions in the first half of this year than in the corresponding period of last year. Montana registered a 28-percent increase in completions, and Colorado's 10 completions were twice the 5 recorded in the first half of 1943.

Record Crude Production

[*Continued from page 17*]

yield of 39.9 percent in April, 1942, and the normal yield of 43.7 percent in April, 1941. Through the change in yields and lowering of production, surpluses of gasoline have been avoided, and the stocks of that product are fairly in line with curtailed consumption. Finished and unfinished gasoline in storage June 30, 1943, totaled 78,861,000 barrels, or 9.8 percent less than the 87,517,000 barrels on hand June 30, 1942. All districts except California have reduced inventories.

While production of gasoline has been lowered, it has been necessary to increase domestic production of both light and heavy fuel oils and kerosine. The production of kerosine in the first half of 1943 was 6.2 percent greater than in the like period of 1942, and there was a 2,000,000 barrel draft on storage, indicating an increase of nearly 12 percent in the demand for kerosine. Yields of kerosine at the refineries have been only slightly increased.

Production of distillate fuel oil was 9 percent larger in the first half of 1943 than in the like period of 1942, but 6,000,000 barrels less came from storage, indicating that demand for this product was about 2 percent greater this year than last year. Stocks of light fuel oil have been kept in line with the slightly larger demand. On June 30 they were 5.5 percent above a year previously. The refinery yield of gas oil and distillate was up to 14.9 percent in April, 1943, from 13.4 percent a year previously and 13.2 percent two years before.

Residual fuel oil has been in particularly great demand, and production of it was 14 percent larger from January to June this year than in the like period last year. However, it was not possible to take nearly as much from storage, the withdrawal having totaled less than 5,000,000 barrels, against one of nearly 17,000,000 in the first half of 1942. Consumption was held down to some extent, meanwhile by the expedient of converting some oil burners to other fuels. These figures indicate a normal increase over last year in the demand for residual fuel oil, although figures are not available on imports to reveal the demand exactly. The yield of residual fuel oil for the United States was stepped up as of April, 1943, to 30.5 percent, compared with 28.1 percent in April, 1942, and 24.6 percent in April, 1941. Stocks of residual fuel oil now are 14 percent lower than a year ago and 30 percent lower than 2 years ago.

OIL PRODUCTION MAINTENANCE, INC. SAYS:
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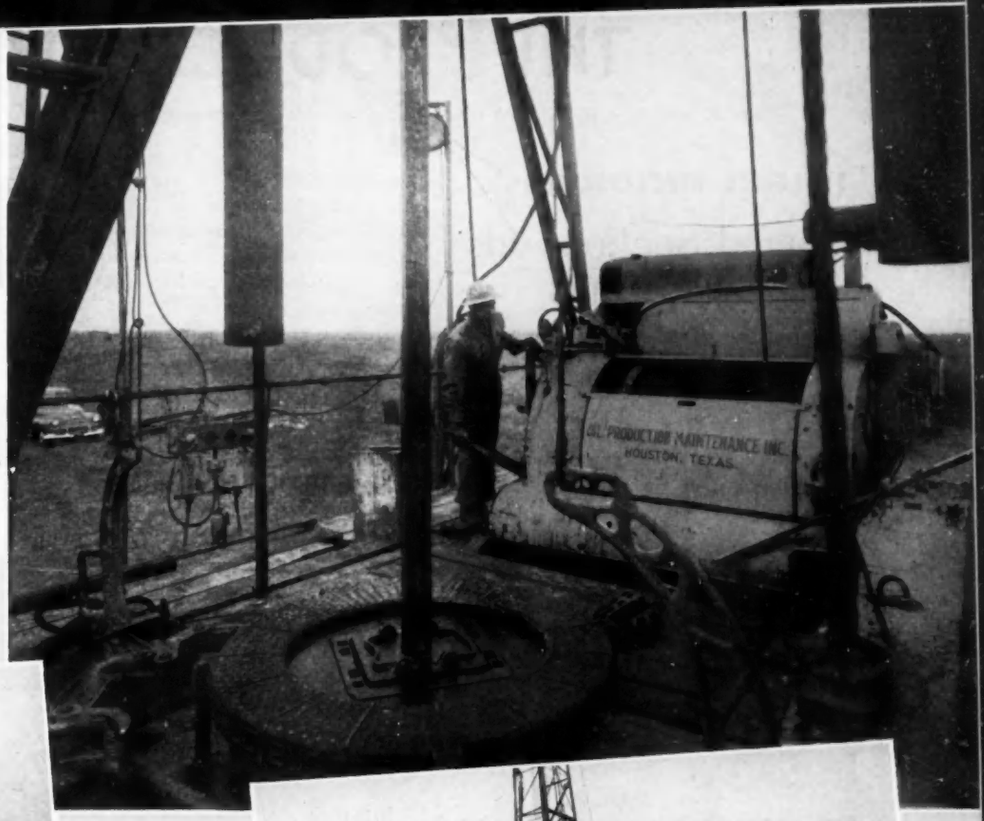

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This streamlined, fast operating set-up would satisfy the most particular drilling contractor or production superintendent. This rig has the light weight and compactness necessary for fast moves and the power and sturdiness necessary for deep drilling and workover jobs.

THE DRAW WORKS

The Model S draw works is powered with a 202 HP Waukesha engine which drives through the "Cardwell" five-speed, even-step transmission to the drum and rotary table. The friction clutch drives enable the drum clutch to be engaged and the drill pipe lifted without stopping the rotary table.

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Using a 202 HP Waukesha engine as a prime mover, the "Cardwell" two-speed drive operates the 7 x 14 Gumbo Buster mud pump. This two-speed drive to the pump furnishes the normal operating pressure in the high drive and extremely high pressure in the low drive for killing wells and to break over and circulate the mud.

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Due to the lower pump speeds at which the higher pressure is obtained, a pump can be operated for short, intermittent periods without damage.

Either pump speed is instantly available.

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PRACTICAL OPERATING *Hints* FOR THE PRODUCTION MAN

$5.00 will be paid for each illustrated acceptable contribution. Mail to The Editor, THE OIL WEEKLY, *Houston.*

1. LEASE ENCLOSURES

Hinged Section Aids Guard Crossings

Plank crossing eliminates use of main by-pass gate by mounted switcher or line-walker.

INCREASED use of the horse as a means of transportation for gaugers, line riders and others whose duties involve covering more ground than can readily be traversed on foot has led to the development of a hinged side member on cattle guards which, normally set back against the sloping braces to which the fence upright is attached, may be turned flat to provide a platform across which the field man may ride or lead his horse, restoring the crossing to its original condition after he has traversed the guard.

Such a crossing eliminates the need for unlocking and swinging aside the heavy gate which usually flanks a cattle guard to allow stock and horse-drawn equipment to bypass the guard. The boards used need not be extremely heavy, as they are afforded support at frequent intervals by the transverse pipes which form the grille of the guard. The hinges, serving only to maintain the unit in place when in the raised position, need be no heavier than for a standard driveway gate.

2. MAINTENANCE

Tool Box Saves Space on Truck

THE tool box for the maintenance gang truck may be made to serve a double purpose if it be equipped as it is by one company which attempts to save space in the pick-up used for emergency repairs. Across the hinged side of the steel lid to the box a light steel back is welded, with supporting or stiffening arms at the ends to insure rigidity to withstand service conditions. The back of the seat, while not interfering with opening of the tool box to the full extent of the unit itself, prevents the lid from being turned back so far as to strain the hinges.

A pair of heavy handles, formed from shaped sucker rod, are welded to the ends of the box, and assist in handling it into and out of the truck.

Dual-Purpose Tool Box

3. SAMPLING

Solvent Container Abuts Centrifuge

This set-up permits correct dilution of sample, and aids in cleaning of shake-out tubes.

TO simplify the operation of obtaining field shake-outs, one company mounts the hand-driven centrifuge on one side of the pick-up truck used by the gauger, setting the unit close to the tail gate so as to make the operation of the crank as easy as possible.

Just ahead of the centrifuge, and with a short line and valve to regulate flow, is placed a screw-top container which carries an ample supply of solvent. With this hook-up the dilution of the crude sample can be quickly and accurately carried out without waste of time or loss of solvent.

Location of the valve is such as to

It Handles High Pressures ...with the greatest of ease!

IN many high pressure areas where competitive packers have failed, this American Iron & Machine Works Co. Type "A" Control Head Packer has been highly successful in holding extreme pressures. In fact, *we have never had a failure with this packer where it has been properly set.*

However, this is only one reason for this packer's popularity. It has many other uses. It can be used for acidizing and washing wells . . on squeeze jobs . . to prolong the life of flowing wells . . to locate casing leaks . . for repressuring and recycling systems . . and in conjunction with gas lift equipment. It will effect a perfect seal under any condition.

LOOK AT THESE FEATURES

An ample by-pass area allows this packer to be run easily and safely in flowing wells, or through heavy fluid. When being pulled, this by-pass area immediately opens . . releases load . . minimizes tension on tubing . . eliminates swabbing action. Our Type "A" Packer has a clog-proof J-tool cage, and can be furnished with or without valve below packer to cut in gas.

By adding a surge or flow chamber to this Type "A" Packer you have our Type "B" Packer which is being used so successfully to prolong the life of wells which would ordinarily have to be pumped.

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prevent any of the solvent being accidentally spilled and allowed to reach the tire of the truck. It is also so placed as to speed up the cleaning of tubes between shake-outs, by facilitating rinsing before the sediment has had time to set or harden.

4. GADGET

Shake-out Samples Heated by Engine

To attain required crude temperatures, this insulated box utilizes radiator water flow.

MANY crudes require heating to insure proper separation of BS&W in the field shake-out, with winter weather adding to the list many crudes which give satisfactory results during warmer weather. To provide heating for the samples before centrifuging, one gauger rigged up a hot-water bath on his car, so that engine heat could be utilized for sample preparation.

An insulated box, large enough to hold four of the centrifuge tubes, is mounted on the front bumper, with hose connections from the closed water space to allow circulation of the cooling system fluid through the box. A tightly fitting cover completes the heat insulation of the unit, heat being retained 15 to 30 minutes after stopping the car in sufficient quantity to insure samples being brought to the desired 110 to 130-degree shake-out temperature.

The box is welded from old tank steel and scrap pipe fittings, the insulation being rock wool filling the space between outer and inner walls of the case.

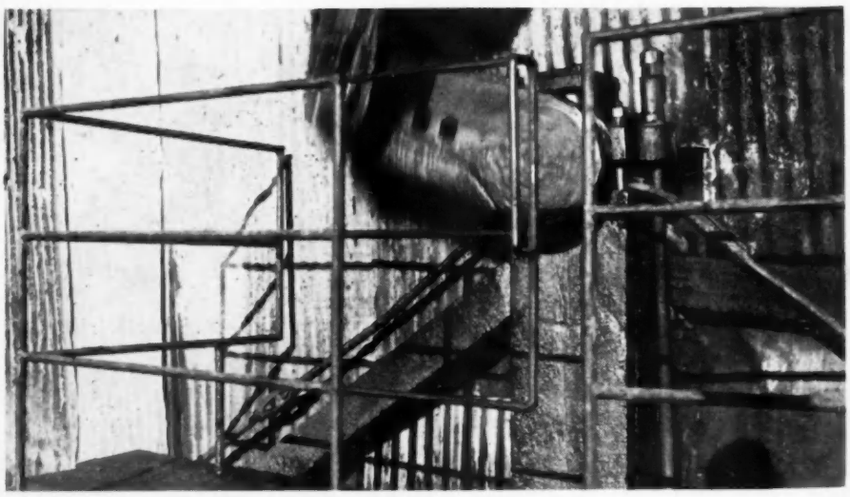
5. SAFETY

Guard Rail Gate Encloses Pitman

A SLIDING gate or door to provide entrance to the crank area enclosed by the safety fence can be made when the rails of the guard proper are composed of pipe. The rails of the guard are welded to the supporting post at the opening where holes are provided passing through the supporting post to match the openings in the railing pipes.

The gate is made of sucker rods spaced so as to match perfectly the holes in the supporting post, joined at the opposite end by bending, or welding to an additional piece of rod.

A handle is attached to this end of the sliding gate for convenience when opening or closing. This is done by simply sliding the gate back or forward, which is assisted by maintaining bearing surfaces covered with jack post grease or other lubricant at hand.



Sliding section within the pipe enclosure safeguarding rig crank permits access for inspection or oiling, while barring accidental trespass within swing of unit.

☆ ☆ ☆ ☆ WASHINGTON ROUNDUP ☆ ☆ ☆ ☆

United States production of oil during August should be at the highest level in history, PAW having asked the industry to produce 4,424,000 barrels daily. This is an increase of 96,100 barrels over July, and 313,100 barrels above the actual output in August, 1942. Of this amount, approximately 250,000 barrels would be distillate and natural gasoline, thus about 1,174,000 barrels of crude oil should be produced. Back in January, 1942, and December, 1941, the industry produced its all-time record in averaging 4,138,000 barrels of crude oil daily.

A full report on the possibilities of subsidies as an alternative to a crude price increase has been asked of the RFC by Stabilization Director Vinson, it was learned during the week.

The possibilities of providing additional revenue for producers without increasing product prices to consumers are being studied by Vinson, but it was not indicated whether the question was being approached from the angle of a subsidy for crude or for refined products.

The demand for a crude price increase was taken to Vinson early this month by Speaker of the House Rayburn and Oklahoma Congressman Disney, with a request that the stabilization director study the industry's situation and OPA's attitude and make a decision on the question.

Opening of the eastern leg of the Big-Inch pipe line and the gasoline rationing picture were the major subjects of discussion in Washington during the week.

While agreed that Midwest supplies should be siphoned to the East, Ickes and Brown disagreed on the use to be made of the gasoline secured. Over both hung threats of Congressional reprisals should Middle-West rationing be stiffened in an effort to permit an increase in East Coast allowances.

Meanwhile, War Mobilization Director Byrnes was studying the supply situation, and PIWC announced the appointment of a committee to make a special study of rationing policies.

Deliveries of oil to the East Coast by tank car dropped 22,793 barrels daily to 944,236 barrels during the week ended July 17, with further decreases scheduled for the future as a result of the opening of the Big-Inch throughout its length. The Eastern stock position, however, gained another point to 35 percent of normal, but compared unfavorably with the index of 52.6 percent for the corresponding week a year ago.

The post-war fate of more than $1,250,000,000 worth of synthetic rubber, pipe line and aviation gasoline facilities financed by the government also came to the fore during the week, with Secretary of Commerce Jesse Jones warning against the scrapping of these and other war plants lest we again be caught short as we were on Pearl Harbor day.

Jones recommended that where possible, plants be disposed of to private operators but admitted that this might be difficult in cases where the government owned all or most of an industry, as in the case of synthetic rubber and aviation gasoline.

Taking issue with Vice President Wallace, who has said that the synthetic-rubber industry would be abandoned after the war, Jones warned that "we should never again be entirely dependent upon foreign sources of rubber."

August Crude Production to Reach All-Time High

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Vinson Studying Possibilities Of Subsidy for Oil

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Post-War Disposition of Plants Worries Jones

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Navy and Standard Discuss New Elk Hills Contract

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By B. F. LINZ
Washington Correspondent

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Texas-Louisiana Quotas Raised for Big-Inch

Production of 4,424,600 barrels daily of all petroleum liquids was certified July 19 by PAW for August, an increase of 96,100 barrels over the current month and 313,100 barrels above actual output in August, 1942.

Output in Districts 1 and 2 was scaled downward, the latter dropping below 1,000,000 barrels daily, but District 3 was raised 117,600 barrels of which 90,000 barrels was assigned to Texas and 25,000 to Louisiana, with small increases also in Districts 4 and 5 The District 3 increases were due to completion of the Big-Inch through to the coast which will make additional transportation capacity available to the Southwest next month.

All three District 1 states received lower allocations for August, New York being cut from 15,000 to 14,600 barrels; Pennsylvania from 46,800 to 46,300 barrels and West Virginia from 16,500 to 15,600 barrels.

Ohio was the only District 2 state to receive an increase—from 9,800 to 10,000 barrels, while Illinois was cut back from 233,000 to 222,800 barrels, Indiana from 14,500 to 14,000 barrels, Nebraska from 2,200 to 2,100 barrels and Oklahoma from 361,400 to 347,000 barrels, and Kansas was left unchanged at 300,000 barrels, Kentucky at 25,000 barrels and Michigan at 60,100 barrels.

In District 3, Texas was increased from 1,727,000 to 1,817,000 barrels (The Oil Weekly, July 19, p. 52), Louisiana from 331,300 to 356,300 barrels and New Mexico from 105,700 to 110,000 barrels, while Mississippi was left unchanged at 50,000 barrels and Arkansas was reduced from 77,200 to 75,500 barrels.

Recognizing increased productive capacity in the West, Wyoming was increased from 97,200 to 98,000 barrels and Montana from 21,800 to 23,300 barrels, but the third District 4 state, Colorado was left unchanged at 7,000 barrels.

California production was increased from 827,000 to 830,000 barrels.

Byrnes "Investigating" Oil; Statement in Two Weeks

Indicating that he was more concerned about next winter's fuel oil than with present supplies of gasoline, War Mobilization Director Byrnes said July 21 that he hoped to complete his investigation within ten days or two weeks and promised to make a comprehensive public statement at that time.

Whether the report will contain recommendations or simply recite the facts of the Eastern oil supply situation has not been determined, he said.

Byrnes disclosed that Price Administrator Brown was not the only official asking for the investigation which he initiated last week, and that many requests had been received, including one from ODT.

The study is being made in two parts, one concerned with the offshore demands for military use and the second the supply and transportation faciliites available for civilians.

Meanwhile, Stabilization Director Fred M. Vinson is studying the appeal of a Congressional bloc for a 35-cent increase in crude prices, but is not expected to make any decision until Byrnes has completed his inquiry, since the mobilization director's findings as to the supply situation may be of importance in deciding the price question.

PAW Organizes On A Global Basis

PAW at the end of the week organized on a global basis, tying in with the Petroleum Reserves Corporation set up by RFC and now part of the Office of Economic Warfare and in line with the PIWC recommendation for consideration of the oil supply problem on a world-wide basis.

Ickes' global activities will be guided by a new program division of which Stewart P. Coleman, formerly director of the department of economics established in 1940 by Standard Oil Company of New Jersey, and well known in international oil circles as a petroleum economist.

The Petroleum Reserves Corporation (The Oil Weekly, July 19) was created following lengthy consideration of the current and prospective oil supply situation by high administration officials planning for a rapid expansion of the war.

Under its charter, PRC may acquire crude from sources outside the United

States, to do which it is given a free hand to purchase stock in corporations owning such supplies and to produce, refine and transport oil on its own account, constructing and operating refineries, pipe lines ad such other facilities as may be necessary in foreign countries.

At its July meeting, PIWC strongly recommended a world oil survey with a view to relieving the strain on this country by developing supply sources abroad.

The new PAW program division will deal with the supply question on a global basis, it was announced by Davies in disclosing its formation.

"As the United Nations shift to the offensive on a global scale, petroleum required by our armed forces will approximate the total tonnage of all other war supplies combined," Davies said.

"Both the military operations and the accompanying petroleum supply problem are international in scope and it becomes increasingly necessary to develop a tightly knit and thoroughly coordinated petroleum supply program to meet the military and essential civilian needs of the United Nations.

"The new division, after review or consultation with the economics committees of both PIWC (representing domestic oil operators) and the foreign operations committee (representing foreign oil operators), will report on suggested program alternatives for execution by PAW.

"The program division will absorb part of the work and act as a clearing house for the remainder of the activities hitherto carried on by the programming sections of the PAW functional divisions. Formerly these activities were coordinated through inter-division liaison."

Jones Worrying About Plants After the War

What to do with some 25 billion dollar's worth of industrial facilities which have been constructed with government money for the War program will be one of the major problems of the post-war period, it was declared July 21 by Secretary of Commerce Jesse H. Jones.

Discussing the future of these facilities in a nation-wide broadcast, Jones revealed that the government will have an investment of $625,000,000 in plant facilities sufficient to manufacture more than 800,000 tons of synthetic rubber annually, $180,000,000 in 3800 miles of pipe line, and $500,000,000 in 50 plants for the manufacture of aviation gasoline, 20 of which are owned by Reconstruction Finance Corporation.

"It is not reasonable to suppose that we will rely entirely upon synthetic rubber after the war," he said, "but we will need to maintain and operate the most efficient of these plants and produce a very substantial amount of our rubber requirements, so that never again will we be wholly dependent upon outside sources for rubber."

The question of the post-war disposition of the government plants is one on which there are many different points of view, Jones said.

"No doubt some will advocate that government stay in business and operate the facilities with federal funds. Others may urge that we scrap a large part of this war expansion in order to remove undue competition. Still others will be looking for bargains, hoping to buy from the government at sacrifice prices.

"We should, of course, be on guard against undue pressure from any of these groups, for if there ever was a question which must be settled in the national interest, it is the future utilization of this vast industrial empire.

"Where any industry is able to absorb government facilities in its line, on a basis fair to government, that policy should be adopted, the government selling or leasing the facilities on fair and reasonable terms," he said. "In those industries where government facilities approximate or far exceed those in private hands, the solution will be more difficult. For example, there is synthetic rubber. We will own all of this industry, and Congress must determine how much of it we will maintain. Certainly, we should never again be entirely depending upon foreign sources of rubber."

Ickes Not Muzzled by Jones-Wallace Spanking

Less than a week after President Rooesvelt punished Vice President Wallace and Secretary of Commerce Jones for engaging in public controversies, his accompanying ultimatum that any official who did so in the future should immediately submit his resignation was challenged by Ickes in an address and interview in New York.

In his address, delivered before the Sales Executives Club in New York July 20, Ickes declared that if the war program has broken down at any point it has been due, not to the "brain-trusters", "New Dealers" or "bureaucrats" but to the big-business executives like Nelson, Knudson and Stettinius who have ben given vast powers by the President.

More indirectly, the oil administrator criticized Price Administrator Brown for views that conflicted with his own regarding the oil and gasoline situation. In effect, he declared that if he was competent to deal with the oil problem he should have complete authority; if not competent, he should be dismissed.

"If I am not competent as petroleum administrator to advise the country on oil supplies and requirements, then the President ought to fire me and get somebody else," he said. "So long as I am petroleum administrator I ought to give out information on gasoline. Then you would not have one thing today and another tomorrow."

In Washington, observers saw in Ickes' address and interview a breach of the President's demand that inter-agency conflicts be settled by War Mobilization Director Byrnes or, as a last resort, himself, which was accompanied by a demand that any official who issued a public statement on such a controversy should simultaneously submit his resignation.

The breach between Ickes and Brown has recently widened as a result of controversies over the crude-price increase and pleasure driving, and Ickes' criticism indicated clearly that the situation was not relieved by Nelson's action in setting up two committees on petroleum requirements and rationing (THE OIL WEEKLY, June 28) after turning down Ickes' demand for full control.

There were indications, however, that the New York incidents would be overlooked. The Office of War Information on July 21 issued a formal statement that while the speech was delivered before it was cleared through OWI, that was due to a misapprehension, and it was eventually cleared "without any policy questions having been raised."

At the White House, Secretary Stephen Early said OWI retains responsibility for passing on official speeches and since it had cleared the Ickes address there appeared to be no controversy.

Ration Equalization Plan Starts Bitter Protests

Recommendations of PIWC for equalization of gasoline rationing in the East and Middle West, which would tend to ease the situation in the former, and announcement by PAW Ickes that rations for the entire country east of the Rocky Mountains would be leveled out within 60 days, has precipitated a young rebellion in the Midwest against any limitation of the generous allowances of motor fuel now enjoyed.

Members of Congress from the interior states telegraphed Ickes and Price Administrator Brown demanding that no action be taken until they had been given an opportunity to "investigate".

The general tenor of the protest was that the East certainly should have more gasoline, but not at the expense of pleasure driving in other sections of the country.

The situation created considerable bitterness in the East, where it was pointed out that the ban on pleasure driving was being rigidly enforced, with thousands of recalcitrant motorists penalized; transportation services had been skeletonized, delivery services cut to the bone and important war industries faced with daily breakdowns in transportation which would cut the flow of military material, while across the Alleghanies rationing was more a theory than a fact.

Both PIWC and Ickes looked to the opening of the Big-Inch and the release of cars which could move prodcuts from the Midwest as the possible salvation of the East. By leveling the rations for Districts 1, 2 and 3, it was pointed out, "the entire area will then be able to share the disproportionate military burden which conditions have made it necessary for the East Coast to bear."

However, it was asserted by Chairman William R. Boyd, Jr., in releasing the resolution urging Ickes to act, the oil situation nationally is critical because of the failure of the government to increase the price of crude; material and manpower difficulties affecting the drilling of wells; the necessity for manufacturing fuel oil in preference to gasoline, and the tremendous military demand, which currently is equivalent to about 25 percent of the total domestic crude production but represents a greater drain because the manufacture of special war products, particularly aviation gasoline, requires a disproportionate amount of the gasoline-refining capacity.

Announcing his determination to equalize rationing, by recommendation to OPA, Ickes admitted that it would mean decreased allowances in the Middle West and Southwest and, looking to the worst that could happen, as us-

ual, expressed doubt that there would be enough gasoline for much non-necessitous driving anywhere.

Leader of the opposition was Representative Clarence J. Brown of Ohio, who insisted that no change be made in gasoline allowances outside the East until Congress reconvenes in September and wired Ickes that 262 Congressmen were opposed "to the imposition of any unnecessary further restrictions on the use of gasoline outside the Eastern shortage area."

South American Imports Said to Be Impracticable

In a formal statement, Russell B. Brown, general counsel of the Independent Petroleum Association of America, last week declared proposals to solve the East Coast supply situation by enlarged imports from South America to be impracticable. He cited the testimony of General Brehon B. Sommervell, chief of the Army Supply Forces, before a Congressional subcommittee that owing to shortages of crude which are appearing in this country, more refining capacity was needed in South America to safeguard the South and Central Pacific war requirements.

Somervell's testimony, Brown declared, definitely disposes of contentions that there is a large unused refining capacity in Venezuela through which the East Coast could be supplied.

At the same time, he said, enemy submarines are still active from time to time in Caribbean and Atlantic waters, and all takers now in service are carrying war cargoes.

"At best," he said, "any tankers that might be available could bring in no more than enough oil to offset the decline in domestic fields, leaving us precisely where we are now — with not enough oil for anyone."

Brown also attacked OPA claims that a 35-cent increase in crude price would cost the consumer "billions" of dollars annually, pointing out that even should it be passed on to the consumer the additional cost would be less than one cent per gallon.

PIWC Committee Will Study Gasoline Rationing

Formation of a committee to study the entire gasoline rationing problem has been announced by William R. Boyd, Jr., chairman of PIWC.

Headed by John A. Brown, president of Socony-Vacuum Oil Company, New York, and chairman of the general industry committee for the East Coast, as chairman, the committee will consist of C. S. Beesemyer, vice president of Gilmore Oil Company, Los Angeles; J. W. Carnes, vice president of Sinclair Refining Company, New York; R. H. Colley, president of Atlantic Refining Company, Philadelphia; H. D. Collier, president of Standard Oil Company of California, San Francisco; R. E. Decker, president of National Oil Marketers Association, Detroit; W. Alton Jones, president of Cities Service Company, New York; J. Sayles Leach, vice president of The Texas Company, Houston; J. A. Lentz, Continental Oil Company, Denver; B. L. Majewski, vice president of Deep Rock Oil Corporation, Chicago; Charles F. Roeser, Roeser & Pendleton, Fort Worth, and E. G. Seubert, president of Standard Oil Company, Indiana, Chicago.

"Neither the oil industry nor the Petroleum Administration for War has the authority to decide what the gasoline-rationing system should be," Boyd said. "Our joint responsibility has been and still is to supply the gasoline to be rationed, and that duty makes it only right that the oil industry should suggest ways to make the rationing system as effective as possible.

"The prospective necessity to ration because of a gasoline shortage, when supplies are equalized in the entire area east of the Rock Mountain States, will increase the difficulties of handling rationing. In fact, equalization for motorists probably cannot be introduced until some major changes are made. We in the oil industry appreciate the tremendous problems involved, and we are going to study the matter intensively to see if we can make any concrete suggestions that would be helpful.

"Although it is obvious to everyone that the present gasoline-rationing system is not perfect, our war council's action should not be construed as critical of the rationing authorities. The oil industry has vital responsibilities for supplying both military and essential civilian demands that will be affected by the future success of the rationing program. Therefore we must carefully study the problem and make whatever suggestions we can to the petroleum administrator, by whose authority we function."

New Agreement Proposed For Elk Hills Development

A new agreement for the development of Elk Hills which will meet criticisms of the contract entered into last November and abrogated by the government last month and at the same time avoid the litigation incident to condemnation, is being discussed by Standard Oil Company of California and Navy Department officials.

The conversations were disclosed last week to be going on, in a statement by H. M. Collier, president of the company, who intimated that his company had been forced into the contract by a threat that the government woulld resort to condemnation of its properties as an alternative.

"The contract was not all that could have been desired from our company's point of view, but ironically enough the attack made upon it was based on the premise that it was," Collier said.

"We considered it a very costly sacrifice on our part, for it not only restrained our use of our own oil lands during the war, but after the war period would, at the Navy's discretion, actually close down our wells indefinitely. At the same time the contract would compel us to stand ready at any moment, even though it might be 50 years from now, to reopen the field and produce and handle the oil upon the Navy's order."

The company, he pointed out, agreed to the contract because it recoginzed the national interest and because of the threat of condemnation.

"Of course we would be forced to resist condemnation, if it came to that," he explained, "but we would not want to be put in the position of obstructing any important governmental program —certainly not in wartime."

Whether the Navy will be permitted to go ahead with another agreement will depend to some extent upon the temper of Congress when it reconvenes in September. Legislation has been proposed, setting up a specific policy for the administration of the Naval Reserves, but whether any action will be taken on it hinges to considerable extent upon the completeness and developments of investigations which were set under way before the recess.

In the meantime, the company is producing from the Elk Hills field under an interim arrangement entered into after the old contract was canceled by the Navy.

Launch Fuel-Manpower Conservation Campaign

A nation-wide conservation campaign throughout all industry, designed to release critical resources for war purposes was initiated July 22 by PAW Ickes, ODT Eastman and WPB Nelson.

Aiming at the saving of fuel, manpower, equipment and materials, the campaign will be guided by an interagency committee composed of Ralph K. Davies, deputy oil administrator; J. A. Krug, director of the Office of War Utilities; H. A. Gray, deputy Solid Fuels Administrator, and Transportation Director Joseph B. Eastman.

In a joint statement, the heads of PAW, ODT and WPB called upon the oil, electric, natural and manufactured gas, coal, water supply, communications and transportation industries to develop plans for an intensive voluntary conservation campaign to get under way late this summer.

"Conservation of fuel, manpower, equipment and materials is a 'must' for the United States if we are to achieve the maximum war production every American wants," they declared.

"Every pound of coal, every gallon of oil, every cubic foot of gas that can be saved means that our national energy pool is strengthened just that much. Every man-hour saved in the production of these basic fuels, in the production of electricity, in transportation and in communication is a man-hour that can be used for something else.

"These savings and the countless others that will result from a broad conservation campaign may appear small in the average household or the average industrial or commercial plant. Multiplied by millions of homes and thousands of factories and stores, however, they were tremendous."

Purchaser Seeks Price Boost in Michigan

Leonard Pipe Line Company, chief buyer of crude from the Headquarters pool, Roscommon County, Michigan, has asked OPA authority for an increase in the posted price of from $1.39 to $1.48 per barrel. Production from the Headquarters area averages 5500 barrels daily.

The request was made following OPA approval of such an increase granted for Traverse grade crude in two Newaygo County pools recently.

Hearings Started to Determine Efficient Maximum Rate of Flow for Texas Fields

A survey of Texas' flush oil fields to determine their maximum productive capacity was begun by the Texas Railroad Commission last week. In a series of hearings set through August 4, the Commission has asked producers to appear and estimate the maximum efficient rate of flow for these fields.

Several hearings have been set for each day. Much of the information supplied is a duplication of the data furnished to the Ivy committee, an industry committee named by PAW to determine the reserves of Texas oil fields. It appeared likely that the information obtained would be used by the Commission to fix allowables for the fields in the future, just as similar data obtained last January was used to set August allowables for several Gulf Coast fields.

Commission examiners were interested primarily in changes in gas-oil ratios, percentages of water, and bottom-hole pressure decline. They wanted to know about the available pipe line capacity to transport oil from the fields. Their interest in reserves was limited to the amount of oil that could be produced from the field without waste for the next 12 months.

Greta was the first field discussed. Atlantic estimated it could produce a maximum of 16,000 barrels daily, 13,593 barrels in excess of the August allowable. Atlantic estimated that Greta Deep could produce 1,000 barrels daily, 657 more than it was allowed for August.

Humble estimated that Heyser could stand no increase. It has an allowable of 10,470 for August. La Rosa can stand an increase of 3,641 barrels to 4,500 barrels, the Stanolind estimated, but the field is now operating under pipe line proration, indicating that there is no outlet for more oil.

Luling Oil and Gas Company thought South Ceasar could be raised 3,146 barrels to 4,200 barrels daily. However, Logco Pipe Line Company, which serves the field, could not take this amount now. McFaddin can produce about 1,218 barrels more daily, the Barnsdall estimated, or a total of some 6,400 barrels.

Placedo can be raised about 785 barrels to 7,020, the Barnsdall estimated. Tom O'Connor can produce 50,000 barrels daily, the Humble estimated, 16,830 more than it is producing now. However, there are insufficient pipe line facilities to handle the larger amount of oil.

The second day the Commission took up a new series of fields. Stanolind estimated that the Maurbro field could produce 2,000 barrels daily, 900 barrels more than it produced in July. Humble estimated West Ranch could be increased 7,489 barrels to 25,000 barrels.

Gulf estimated North LaWard could produce 4,000 barrels per day, or 2,000 more than it was allowed in July. Plymouth can produce about 6,000 barrels, 500 more than it gets now, according to testimony from the Plymouth Oil Company. Continental estimated that Rincon could produce 10,000 barrels daily, 3,500 more than it was allowed during July.

Magnolia thought Seeligson could be increased from the current allowance of 3,786 barrels to 12,000 barrels daily. Humble estimated that Stratton could be increased 6,330 barrels to 9,500 barrels per day. East White Point could be raised 5,000 barrels to 16,000 barrels daily, according to the Sinclair estimate. Estimates of other operators, however, were much lower.

Sun Oil Company thought the Colorado field could produce 4,620 barrels, or 3,310 more than is being allowed now. North Sun could produce 1,040 barrels instead of the current allowance of 660 barrels.

Texas Commission Sets More Field Hearings

Several hearings of importance to Texas oil operators have been set by the Texas Railroad Commission.

July 26: Hearing to determine the productive capacity for the next 12 months of the following fields in Gulf Coast District 3: Fairbanks, Fannett Deep, Fig Ridge, Fisher's Reef, Fred, Hastings, Hitchcock, LaBelle, League City, Lovell's Lake.

Operating rules for the area surrounding the Magnolia No. 1 State-Powell in Section 96, Pecos County, will be considered at another hearing.

July 28: Hearing to determine the maximum productive capacity for the next 12 months of the following fields in the Commission's Gulf Coast District 3: Lucky, Magnet-Withers, Manvel-Oligocene, North Markham Cornelius Sand, Mercy, Nome, North Withers, Old Ocean, Oyster Bayou, Port Neches West, Raccoon Bend Cockfield, and Redfish Reef.

Hearing on the application of Humble concerning salt water disposal in the Yates field, Pecos County. This hearing was recessed from July 7.

July 29: Hearing to determine the maximum productive capacity in the following fields for the next 12 months: Rowan, Seabreeze, Segno, Segno Deep, South Houston, Stowell, Sugarland, Thompson, North Thompson, South Thompson, Tomball, Webster.

Hearing to consider revision of the rule limiting gas production from oil wells in the Cayuga and Long Lake fields.

July 30: Hearing to determine the maximum productive capacity of the following fields in District 6: Chapel Hill, Hawkins, Coke and Quitman, Van; and the Noelke field in District 8, Crockett County.

Special hearing on the application of L. L. Sugar for relief from the five to one water-oil ratio order in the East Texas field. This is the second hearing of its kind.

August 2: Hearing to determine the maximum productive capacity of the following fields in District 8: Abell, Cedar Lake, North Cowden, South Cowden, Embar, Embar Permian, Foster, Furhman, West Furhman, Goldsmith, Yates.

August 4: Hearing to determine the maximum productive capacity of the following fields in District 8: Jordan, Magnolia Sealy South, McElroy, Sand Hills Ordovician, Sand Hills Permian, Seminole, Slaughter, Spencer, Waddell, Walker and Wasson.

August 5: Hearing to determine whether the Halley and Emperior fields in Winkler County are producing from the same reservoir, and whether the proration methods should be the same for both fields.

Application of Seaport Oil Company for an increased allowable for the Mauritz field, Jackson County.

August 7: Hearing to determine whether the gas-oil ratio rule for the K-M-A field should be revised.

Sun Oil Company believes Anahuac can be increased 4,000 barrels daily to 36,000 barrels. Hnmble Oil & Refining Company estimated Clear Lake could produce 6,000 barrels, 1,970 more than the July allowable. Albert Plummer said Colletto Creek could be increased from the July allowance of 614 barrels to 3,000 barrels per day.

Hearings held during last week brought to light fields which operators believe can produce some 90,000 barrels daily more than they are allowed now. This is all sweet oil and should be sufficient to supply any increase in demand for the month of September.

Texas August Allowable Set at All-Time Peak

The Texas Railroad Commission's August proration order fixes an allowable of 1,817,937 barrels daily, the highest figure ever set for the state. Included was an increase of 87,656 barrels in 13 Gulf Coast fields. PAW had requested 1,817,000 barrels from Texas, an increase of 90,000 barrels, and had asked that all of this increase be granted in fields producing sweet oil which could be made available to the Longview terminal of the Big-Inch pipe line.

The commission set 22 producing days for the state as a whole, and 23 days for the East Texas field, the same number that was allowed for July. The Gulf Coast fields whose allowables were raised were exempt from shutdown.

In raising these Gulf Coast fields, the commission exceeded nominations in several instances. Apparently it turned to the "crude availability report" compiled last January from information supplied by producers. At that time the producers were asked to estimate the maximum productive capacity of the fields, and in several instances the August increases granted amounted to these capacity estimates exactly.

In most other fields the allowables were unchanged, or the changes made were relatively small. The comparative figures by districts on July 10 and August 1, are set out in the table below. These are net figures, and indicate actual production on each calendar day.

District	July 10	August 1
1 Southwest Texas ...	19,663	19,663
2 Southwest Texas ...	104,275	105,881
3 Gulf Coast	403,404	491,460
4 Southwest Texas ...	157,723	164,480
5 East Central Texas.	28,801	28,801
6 East Central Texas.	104,956	104,956
7 East Texas field....	373,146	373,146
7-B West Cent. Texas.	29,036	29,036
7-C West Cent. Texas.	19,726	19,726
8 West Texas	239,816	246,584
9 North Texas	129,180	129,180
10 Panhandle	98,552	98,552
Total.....	1,710,278	1,813,465
Less Estimated Underproduction .	90,585	111,528
Balance.....	1,619,693	1,701,937
Distillate and Natural Gasoline	116,000	116,000
Total, all oils.....	1,735,693	1,817,937

Generally, shut-down orders were

similar to those for July. However, included in the list of fields exempt were Turtle Bay East, Hastings, South Houston, Sugarland, Thompson, Webster, and Clear Lake in the Gulf Coast. Yeager and North Magnolia City were exempt, as were Slaughter, Keystone, Ellenberger, Vincent, Stephens, Peek, Wolf, McDonald, and Shannon.

Hobson and Bird Island, which had been exempt from shut-down in July, were limited to 22 producing days in August. Other fields were unchanged.

Oklahoma Hearing

Oklahoma Corporation Commission has set July 28 for considering market demand and to fix allowables for August. Hearing is scheduled for 11 a.m. at Oklahoma City.

Kansas Hearing

The Kansas State Corporation Commission has set July 27 as the date for considering market demands and to fix the state and pool allowables for the month of August. Hearing is scheduled for 10 a.m. in Wichita.

2000 Tank Cars Shifted To Texas-Coast Run

With Transportation Director Joseph B. Eastman seeking to pull another 6,000 tank cars out of other services for oil movement, PAW this week was making plans to divert 2,000 of the cars which have been engaged heretofore in the Norris City-East Coast run.

With the extension of the big inch beginning to move oil, 6,000 cars immediately will be put on the East Texas-East Coast run to make up as much as possible of the temporary drop in receipts while the line is filling, and the remaining cars will be used to haul products from the middle west.

PAW officials said that the cars in their new services will not be able to move as much oil as on the Norris City run, the crude cars, because of the much longer haul and the product cars, because of the fact that, instead of moving to a dozen refinery locations, they will be shipped to a large number of points throughout District 1.

Commission Hearing Set On Shutting in Injection Well

The Texas Railroad Commission has set for July 29, the first hearing ever scheduled on an application to shut in an injection well. P. G. Lake seeks to close a well, which is being used by the East Texas Salt Water Disposal System as an injection well.

Lake alleges water and chemicals injected through this well are contaminating the Woodbine formation, the producing oil sand in the field, "as a result whereof large amounts of oil in the drainage area of Lake's wells have been drowned and channeled away . . . "

Lake charges also that one effect of the injection operation has been to increase water production from some of his wells by as much as 500 percent. Decisions resulting from this application may affect salt water and other injection programs in every field in the state.

Kentucky Association Holds Mid-Year Meet

Kentucky Oil and Gas Association held its mid-year meeting at Ashland, Kentucky, on July 24. The following speakers appeared before the gathering: C. B. McClintock, division of secondary recovery, producing division, PAW, "Water Flooding in the War Program"; Frank M. Brewster, director of Region 1, division of Natural Gas and Gasoline, PAW, "Can the Appalachian Region Produce Enough Gas for the Coming Winter?"; W. B. Heroy, director of reserves, PAW, "Practical Conservation"; Don R. Knowlton, director of production, PAW, "Production Problems Confronting the Oil Industry in the War Program"; and Harold B. Fell, chairman District 2, "Effect of Present Trends on the Independent in the Petroleum Industry."

District 4 Committee Meets in Montana

The production committee of District 4, held a meeting at Cut Bank, Montana, July 21. D. R. Knowlton, director of production, PAW; R. V. Shirk, chief of reclamation and joint facilities, Washington, Michael J. Foley, director of production for District 4, Denver, and John B. Schuyler, director of materials, District 4, all addressed the meeting.

Members of the Board of Railroad Commissioners and the Oil Conservation Board, and other officials of the state government attended the meeting.

District Two Committee Meets in Michigan

Manpower classification, material requirements for anticipated drilling, cooperation in wildcat drilling and secondary recovery were among the most important problems considered by District Two Production Committee which met in Higgins Lake, Michigan, July 17, according to a statement released by H. B. Fell, chairman.

Dr. B. B. Weatherby, chairman of the subcommittee on manpower, presented the report of his subcommittee including Manual of Job Clasification, Definitions and Training Times for Petroleum in District Two. The Committee accepted the report and is having enough copies mimeographed to furnish one to each producer's association in the District so they can make copies available to their members. The Regional Manpower Commission Office has approved the Manual. The Manual will be of great benefit to the production branch of the industry in District Two. The subcommittee will now investigate and report on manpower problems.

The chairman stated that the survey on anticipated drilling, by areas for the ensuing twelve months, to be broken down by quarters and converted into tonnage of critical materials required, would not be carried on by the Engineering and Well Spacing subcommittees but that the larger companies would be requested by PAW to estimate their drilling program for the ensuing twelve months, which estimates would be used as a basis in determining material requirements. The chairman pointed out that this procedure would save a substantial amount of time for technical employees.

Wirt Franklin, recently appointed special field assistant to the Deputy Petroleum Administrator, stressed the need for increasing maximum efficient rate of production on account of the crude oil shortage that is rapidly developing and the necessity of major companies and large independents supporting wildcat wells, even though complete geological or geophysical information may be lacking, in order to increase exploratory effort.

Supplementary Order No. 2 to PAO-11 is being amended to include Eastern Ohio and Eastern Kentucky and should be out shortly. The order permits 5 acre spacing to depths of 1200 feet, 10 acre spacing to depths of 2500 feet, and 20 acre spacing at depths greater than 2500 feet.

Because of the approaching crude oil shortage in the country, the committee gave considerable attention to secondary recovery as a means of adding to our crude oil supply.

Amended CMP Order Revises Steel Deliveries

WPB on July 21 made public an amended CMP Regulation No. 4 dated July 17, making substantial changes in procedures governing sales of steel by warehouses and distributors.

A major change permits a distributor to refuse any order for steel, including an authorized controlled-materials order, which does not call for immediate delivery.

The order requires distributors to reject any orders calling for delivery to any one person at any one destination at any one time of 40,000 pounds or more of steel products, except rails, except orders covering only oil country tubing, casing or drill pipe, or where acceptance of the order is specifically authorized by WPB, or where the order includes 10 or more individual items, no one of which weighs more than 8000 pounds.

Small orders for steel may be filled without authorization, provided delivery will not cause any one customer to receive at all points and from all sources in any one calendar quarter more than 10 tons of carbon steel, 1000 pounds of stainless steel and 2 tons of other alloy steel, it being explained that the purpose of this provision is "to permit persons using small quantities of steel to obtain their requirements without the use of allotments; it is not to allow users of large quantities to obtain steel in addition to their purchases on authorized controlled material orders."

Gulf Options McCarthy Holdings at Stowell

Gulf Oil Corporation has taken option on Glenn H. McCarthy's oil properties in the Stowell and North Stowell fields of Jefferson County for $3,000,000.

Although neither parties to the trade have announced details, an instrument filed in Jefferson County says that McCarthy has 10 years in which to pay back the so-called loan at 2 percent interest out of half of all run to his account in the fields.

The instrument refers to an option that Gulf Oil Corporation has to purchase McCarthy's properties for a reported price of $32,000,000. The option is said to be effective for 20 months with McCarthy continuing as operator.

Arkansas Commission Committee Making Study of Salt Water Control Problem

Control of salt water in the fields of Arkansas is being studied by a committee working under the direction of the Oil and Gas Commission, and results thus far obtained were outlined at a statewide hearing on July 21.

Various methods of arresting the reservoir pressure decline in the Magnolia field have been investigated, including: pressure maintenance by fluid injection into the producing reservoir; reducing withdrawals by reworking wells producing salt water; transfer of allowables, wherein wells producing salt water could be closed to production and their oil allowable taken from wells producing clean oil; transfer of allowables, wherein wells producing with a gas-oil ratio in excess of 2000 cubic feet per barrel of oil produced could be closed to production and their oil allowable taken from wells producing with a lower ratio; establishing a pro rata system of net volumetric reservoir withdrawals; and reduction of oil allowable.

In the event it is found impossible to dispose of salt water production by injection and pressure maintenance of the producing reservoir, it is planned to test shallower sands for salt water disposal.

From accumulated information it seems that any attempts to rework edge wells now making water would be at best, only temporarily or partially successful. Therefore, it is doubtful that the present volume of salt water production could be materially reduced by reworking.

From the standpoint of reworking high gas-oil ratio wells, there is not sufficient information at present to determine whether reworking will prove successful in reducing the high gas-oil ratio wells.

With regards to transfer of allowables from wells producing salt water to wells producing clean oil, the committee has considered two methods: Transferring the allowable to other clean oil wells on the same lease and royalty ownership, and transferring of oil allowables from wells producing salt water to other clean oil wells, regardless of lease and royalty ownership interest. Results from the former method appear negligible, while transfer by the latter would completely eliminate the salt water production which is now 3600 barrels daily.

A transfer plan, from wells producing with a gas-oil ratio in excess of 2000 cubic feet of gas per barrel of oil produced to wells with a lower ratio, transferred to the same lease and royalty ownership interest would save 64,000 cubic feet of gas daily at atmospheric pressure, or 70 barrels of reservoir space, a negligible saving.

Transferring of oil allowables from wells with gas-oil ratios over 2000 to lower ratio wells regardless of lease and royalty ownership interest, to wells producing with an average gas-oil ratio of 1000 cubic feet per barrel of oil produced would result in a saving of 1,900,000 cubic fet of gas per day at atmospheric conditions, equivalent to 2101 barrels of reservoir space

Calculations show that the net reduction in daily reservoir voidage would be 1530 barrels from establishment of a pro rata system of net volumetric withdrawals per well.

Schuler Field

Disposal of salt water production in the Schuler field has been a problem for the operators for quite some time.

Since February 1943, Marine Oil Company's Justiss No. 5 well, a dry hole, has been used as a salt water disposal well. Unsuccessful attempts to dispose of salt water in this well were made in the James Lime, Buckrange and Meekin Sands and the Salt and Pepper Sand. Finally when the Wilcox Sand was tested from 1020 feet to 1245 feet it was found that this sand had a maximum injection capacity of approximately 3300 barrels per day. At the present time, however, the input capacity is down approximately to 2650 barrels per day with a pump pressure of 60 pounds. Up to June 1, 1943, this system has injected 273,000 barrels of salt water into the well.

Since the present disposal well does not have sufficient capacity to dispose of all the water produced, a recommendation by Phillips Petroleum Company, the operator of this project, has been submitted for the purpose of drilling an additional Wilcox well for disposal purposes.

Village Field

Daily salt water production in this field is approximately 500 barrels. Disposal has been by salt water pits, but this has been troublesome due to occasional leakage and weakening of the dikes.

Reservoir pressure has dropped only .09 of one pound per day since discovery. For this reason salt water disposal in this field becomes important from eliminating fresh water stream and terrain pollution.

Carter Oil Company attempted to dispose of salt water by injection into the Tokio formation which lies above the producing horizon. This experiment proved a failure due to the high pump pressure necessary.

This same operator now has derrick built and is preparing to move in tools on the same well for the purpose of determining if salt water injection into the Smackover Lime is feasible.

Midway Field

Operators in this field began the injection of water April 19, 1943. Results have been more beneficial even than was expected. Application was made to the PAW and was approved for use of the material necessary to build a pressure maintenance and salt water disposal system to serve the entire field. A contract has been drawn and will immediately be handed to all operators in the field for approval and signature. When approval and signature is obtained application will be made to the Commission for permission to carry forward the program.

At an input rate which has been purposely limited to an average maximum of 2500 barrels per day, approximately 200,000 barrels of water has been injected. Input pressure is proportional to rate of input.

The average reservoir pressure measured at wells in the major portion of the field was declining an average rate of 0.56 pounds per day prior to injection. Measurements on July 11, 12 and 13, 1943, show that the decline is arrested and that wells located over 3,000 feet from the input well are showing results.

The success of the operation seems assured. Not only well pressures are increased, but a greater ultimate recovery will result both from an efficient and economical standpoint and at the same time a satisfactory method for disposal of salt water is being demonstrated.

IPAA Meets At Fort Worth

Independent Petroleum Association of America announces its fourteenth annnual meeting to be held in Fort Worth, October 25, 26 and 27, at the Blackstone Hotel. Program arrangements have not yet been completed.

Letters to the Editor

DEAR SIR:

The article "Whence Cometh Our Future Oil" (July 12 issue) was fine. I agree with Levorsen, Denison, Krynine, Pratt, Knowlton and Torrey in regard to vast potentialities in oil reserves. Your summaries of opinion are most excellent.

However, what most geologists and engineers fail to realize is that research must be actively promoted and subsidized through the medium of the experimental geological and engineering laboratories to get results.

I quite well realize the value of creative mental or philosophical approach, but we will obtain quicker results by working in an experimental laboratory than by spending "a part of their time with their feet on a desk," to quote Levorsen, who, however, is the most profound research type geologist we have today, and for whom I have the greatest respect.

Yes, research is the answer. It can be activated by increased subsidization of university experimental laboratories and establishing well staffed research geological departments in our commercial organizations.

Strangely enough, we shall have to go to the seashore to obtain more data on processes of marine forces to understand sedimentary geology. In other words, we shall have to join forces with the zoologist. Geological observers at every marine laboratory in the world is the answer.

In the 1930-1940's we applied our knowledge of new engineering technique to geology. Now, in the 1940-1950's we shall have to relearn our geology and make new geological discoveries to unlock the key to discoveries in petroleum.

MOSES M. KORNFELD,
Geologist
Houston, Texas.

Fuel Oils Taken from Storage Although Refinery Runs and Production are High

Although the industry has continued to maintain production and processing of crude oil around the record levels of this year, it has been barely able to meet current heavy requirements for petroleum products. Despite further increases of production in residual fuel oil and distillate fuel, it was necessary to take both from storage in the week ended July 17, and there was also a substantial withdrawal of gasoline from storage, with output of the latter product slightly less than in the previous week. It has been necessary also to continue taking crude oil from storage, in maintaining refinery operations at the high rates.

Crude oil output further climbed in the week ended July 17, to a new high for 1943, of 4,103,000 barrels daily. This was 13,000 barrels per day more than production in the previous week. It was within about 235,000 barrels of the all-time peak production reached in late 1941 and early 1942. The current production is about 400,000 barrels per day, or 10.5 percent, higher than that of a year ago.

Crude runs to stills averaged 3,962,000 barrels daily in the week of July 17, up 10,000 barrels from the week before and about 400,000 barrels per day, or 11.1 percent, more than a year ago.

Both crude production and refinery runs show considerably larger gains over last year than does the total demand for petroleum, which is only nominally higher now than at this time last year. This situation reflects the present lower imports and the fact that it is not possible to take much from storage, as was being done last year.

Refineries of the United States currently are making use of 82 percent of their rated capacity. Plants of the East Coast and the Southwest are using 77 percent of capacity, Appalachian refineries 82 percent, Middle Western 88 percent, Oklahoma-Kansas 85 percent, Rocky Mountain 65 percent, and California 92 percent.

There is still difficulty in meeting the requirements of residual fuel oil, as evidenced by a reduction of stocks 125,000 barrels in the week of July 17, despite the fact that production for the week was 139,000 barrels larger than in the previous week. United States stocks of residual totalled 67,017,000 barrels on July 17, and were 10 million barrels, or 13 percent, lower than a year before. California and the Rocky Mountain states were responsible for the decrease, all other districts having added to storage. The East Coast-Southwest added 465,000 barrels.

Having totalled 8,331,000 barrels dur-

Crude Oil Production in the United States

(Estimates compiled by The Oil Weekly. All figures indicate daily averages, in barrels.)

STATE OR DISTRICT	PRODUCTION IN WEEK ENDED July 24	July 17
Arkansas	77,100	76,600
California	787,150	786,500
Long Beach	31,000	31,150
Midway-Sunset	56,150	56,450
Kettleman Hills	41,700	39,850
Wilmington	93,850	94,500
Rest of State	564,450	564,550
Colorado	7,250	6,750
Illinois	214,100	209,300
Salem	29,100	28,700
Louden	38,200	34,500
Other New Pools	135,800	135,600
Old Pools	11,000	10,500
Indiana	12,500	13,850
Kansas	306,150	293,700
Kentucky	21,250	22,750
Louisiana	349,350	349,350
North	85,200	85,000
South	264,150	264,350
Michigan	55,800	55,450
Mississippi	53,900	50,600
Missouri	95	95
Montana	21,450	21,550
Nebraska	2,200	2,100
New Mexico	104,150	104,100
New York	14,100	13,900
Ohio	8,650	8,400
Oklahoma	332,950	330,650
Oklahoma City	57,300	57,500
Seminole Area	72,650	71,800
Rest of State	203,000	201,350
Pennsylvania	45,600	43,250
Tennessee	30	30
Texas	1,617,450	1,616,350
Upper Gulf Coast	413,300	413,050
East Texas Field	371,350	371,200
Rest of Eastern Texas	128,400	128,250
Lower Gulf Coast	147,050	146,950
Southwest Texas	66,600	66,450
South Central Texas	16,800	16,750
West Texas	245,650	245,500
North Texas	137,800	137,600
Panhandle	90,500	90,600
Utah	10	10
West Virginia	9,500	8,450
Wyoming	93,800	90,350
Total United States	4,134,535	4,104,185

Trends of Operations and Changes in Stocks

Figures on crude stocks are from Bureau of Mines weekly reports; all others from American Petroleum Institute weekly reports, which are estimates on Bureau of Mines basis.

(All figures in thousands of barrels—add 000)

HIGHS AND LOWS OF RECENT YEARS

ITEM	Crude Oil Prod. Barrels Daily	Crude Oil Prod. Week Ended	Runs to Stills Barrels Daily	Runs to Stills Week Ended	Crude Stocks Barrels	Crude Stocks Week Ended	Gasoline Stocks Barrels	Gasoline Stocks Week Ended	Gas Oil & Distillate Stocks Barrels	Gas Oil & Distillate Stocks Week Ended	Residual Fuel Oil Stocks Barrels	Residual Fuel Oil Stocks Week Ended
Highs:												
1939	3,910	8- 5	3,650	10-21	278,607	5-26	87,769	4-22	39,562	10-28	116,237	8-26
1940	3,890	3-16	3,690	6-22	265,865	8-31	102,817	4-20	49,051	10-19	109,135	9-14
1941	[1]4,337	11-22	[1]4,120	10-18	266,187	3-29	99,727	3-29	[5]54,983	11-15	102,448	1- 4
1942	[1]4,337	2- 7	3,961	1- 3	263,208	3-28	[1]109,281	3-14	49,861	11-14	95,857	1- 3
1943	4,013	7-17	4,015	6-26	245,752	5-29	94,159	3-20	42,913	1- 2	72,881	1- 2
Lows:												
1939	[3]1,601	8-26	3,125	2-18	[2]229,127	10-12	71,152	10- 7	20,722	4-15	105,397	4—8
1940	3,335	11-30	3,370	1- 6	237,339	1-27	79,847	11- 9	23,551	4- 6	102,344	2-10
1941	3,364	1-11	3,490	1-18	240,399	11-15	79,923	10- 4	28,381	4-12	90,914	7-12
1942	3,297	7- 4	3,393	5-23	231,896	12-12	75,934	12-	29,240	4-25	72,962	12-26
1943	3,821	1- 9	3,579	3-13	232,191	1- 9	76,565	7-17	30,732	4- 3	66,470	7- 3

TRENDS OF 1942 AND 1943

Trends in Week Ended:	Crude Oil Production Daily	Crude Oil Runs to Stills Daily	Crude Oil Stocks Week End	Gasoline Production Weekly	Gasoline Stocks Week End	Gas Oil & Distillate Production Weekly	Gas Oil & Distillate Stocks Week End	Residual Fuel Production Weekly	Residual Fuel Stocks Week End
1942:									
January 3	4,038	3,961	244,440	13,797	92,987	3,855	49,357	6,918	95,857
January 31	3,871	3,848	250,740	13,292	97,810	3,817	40,674	6,640	91,189
February 28	4,016	3,675	259,373	12,131	105,635	3,799	34,547	6,813	88,285
March 28	3,820	3,667	263,208	11,663	105,624	3 661	31,756	6,344	83,045
April 25	3,581	3,506	257,073	10,535	102,897	3 267	29,240	6,869	81,107
May 30	3,877	3,522	255,023	10,478	95,355	3,034	31,384	6,993	79,628
June 27	3,719	3,581	253,364	10,713	88,396	3.549	32,851	6,615	77,304
July 25	3,691	3,658	249,262	10,864	82,281	.. ..	35,966	.....	77,816
August 29	3,964	3,697	249,007	11,300	80,831	.. ..	42,060	.....	78,034
September 26	3,909	3,802	242,785	10,954	80,550	.. ..	45,945	.....	78,943
October 31	3,901	3,731	249,266	11,153	79,159	.. ..	48,131	.....	79,166
November 28	3,878	3,736	234,850	11,269	78,854	.. ..	49,739	.....	77,796
1943:									
January 2	3,871	3,734	233,938	10,957	82,420	4,285	42,913	7,683	72,881
January 30	3,826	3,698	233,863	10,339	88,830	3,888	37,057	7,452	70,763
February 27	3,873	3,709	235,217	10,566	93,157	4,230	32,939	7,839	70,140
March 27	3,896	3,742	239,126	10,231	94,079	3,541	30,980	8,018	67,938
April 24	3,913	3,737	242,035	10,583	91,001	3,954	31,142	8,168	67,455
May 29	3,970	4,679	245,752	10,656	83,937	3,798	32,274	7,672	67,682
June 26	3,955	4,015	242,657	11,092	79,589	3,876	34,044	8,126	67,960
July 3	4,008	3,905	240,927	10,892	78,141	3,659	34,380	7,687	66,342
July 10	4,090	3,952	239,091	11,231	77,733	3,697	35,119	8,192	67,142
July 17, 1943	**4,103**	**3,962**	.....	**11,189**	**76,565**	**3,989**	**35,036**	**8,331**	**67,017**
July 18, 1942	3,713	3,564	[4]251,311	10,793	82,908	3,647	35,063	6,796	77,015
Change:									
In week	+13	+10	—1,836	—42	—1,168	+292	—83	+139	—125
In year	+390	+398	—12,220	+396	—6,343	+342	—27	+1,535	—9,998
In year	+10.5%	+11.1%	—4.8%	+3.6%	—7.6%	+9.3%	—0.1%	+22.5%	—12.9%

[1] All time peak. [2] Lowest since April, 1922. [3] Lowest since October, 1922, due to shutdown of six Mid-Continent States. [4] Stocks, July 11, 1942.

ing the week, production of residual fuel was 1,535,000 barrels, or 22½ percent, larger than the 6,796,000 barrels produced in the week ended July 18, 1942. All districts except the Rocky Mountain showed increased production for the week.

Although it is customary to be building up stocks of heating oil at this time of the year, no addition was possible in the week of July 17, and the industry on the contrary took 83,000 barrels from storage, leaving an inventory of 35,036,000 barrels, which was slightly less than the amount held July 18 last year. While stocks are now about the same as a year ago, the potential demand for light fuel oil is considerably higher. This withdrawal of gas, oil and distillate fuel occurred in spite of the fact that 292,000 barrels more was produced than in the preceding week. The production for the week of July 17 was almost 4 million barrels, having been 342,000 barrels, or 9.3 percent, in excess of the 3,647,000 barrels produced in the like week last year. The reduction in stocks of light fuel oil apparently was due in part to substitution of this product for residual fuel in California, as 333,000 barrels came from storage in that state. The Rocky Mountain states also took some from storage. All other districts added to stocks. The California withdrawal occurred in spite of materially increased production, and output of the product was higher also in Oklahoma-Kansas, the Middle West, and the East Coast-Southwest.

Gasoline stocks were reduced by the approximately normal amount of 1,168,000 barrels in the week of July 17, having declined to 76,565,000 barrels. The latter quantity was 6,343,000 barrels, or 7.6 percent less than the 82,908,000 barrels on hand July 18, 1942. Every district of the country took gasoline out of storage. Production for the week was 42,000 barrels less than in the previous week in totalling 11,189,000 barrels. This output was, however, about 400,000 barrels, or 3.6 percent, in excess of the output in the corresponding week last year. California, the Middle West, and the Appalachian district showed increases in production, while all other districts reported decreases.

Crude oil stocks declined from 240,927,000 barrels of July 3, to 239,091,000 on July 10. The latter amount was only 10 million barrels more than the record low for modern years. It was 12 million barrels, or 5 percent, less than the 251,311,000 barrels in storage on July 11, 1942.

Markets Still Are Tight; Eastern Situation Better

Markets remain generally tight, although there has been some further improvement in the supply situation for the East Coast district, as evidenced by the latest report of the American Petroleum Institute on stocks in that area. The API's index of product stock availability covering gasoline and light and heavy fuel oils for civilian use in the East rose to 35 percent of normal for the week ended July 17 from 34 percent the week before, with the new figure comparing with the low point of 25.5 percent for May 8, 1943, and 60 percent for September 12, 1942.

The slight improvement in gasoline supply for the East Coast area has occurred in the face of the fact that the government continues to take a large percentage of supplies. Fair quantities of kerosine are available, but No. 2 fuel oil still is tight, with stocks very low. Some relief is in prospect, however, from commencement of movement through the eastern portion of the Big-Inch pipe line.

Firm demand prevails for all products in the Western Pennsylvania refining district. Kerosine, fuel oils, bright stocks, and cylinder stocks are all tightly held, although there has been some increase in the inventories of gasoline, in consequence of the ban on pleasure driving. Neutral oils are reported to be firm at present quotations.

In the Middle West, there is strong demand for all products. Gasoline demand is reported steadily increasing, and refiners are considerably behind with shipments. The requirements of third-grade gasoline continue heavy, for agricultural purposes, and there is interrefinery bidding for supplies.

Mid-Continent refiners still have extreme difficulty in providing enough gasoline, all grades being scarce. There is now especially strong demand for Ethyl gasoline, and stocks of that product are low, with the result that some refiners are materially behind with shipments of it. Kerosine also is in strong demand. Refiners are steadily booking orders for furnace oil, but generally are unable to make shipments now for summer filling of tanks, because transportation facilities are being strained in handling current requirements of oils for agricultural purposes.

Markets continue remarkably tight on the Gulf Coast, with gasoline particularly scarce. Demand for that product is very great, while inventories of practically all refiners are extremely low. Light fuel oils also are tight in the district, although there are more adequate supplies of residual fuel oil.

Production at New High Third Consecutive Week

United States crude oil production averaged 4,134,535 barrels per day in the week ended July 24, thereby setting a new record for this year for the third week in succession. The output was back up within about 200,000 barrels of the all time peak that was reached late in 1941. It was 30,350 barrels above the daily average of the week ended July 17.

The increase reflected gains in Arkansas, California, Colorado, Illinois, Kansas, Michigan, Mississippi, New Mexico, Oklahoma, Ohio, New York, Pennsylvania, Texas, West Virginia, and Wyoming. Louisiana was unchanged, and there were decreases in Indiana, Kentucky, and Montana.

The more important increases in daily average output included those of 4800 barrels in Illinois, which was up to 214,100 daily, 12,450 in Kansas which averaged 306,150, and 2,300 in Oklahoma, which rose to 332,950 per day. California rose 650 barrels to 787,150 daily, Texas 1100 to 1,617,450, West Virginia 1050 to 9500, Pennsylvania 2350 to 45,600, and Wyoming 3450 to 93,800. Arkansas averaged 77,100 barrels per day against 76,700 the week before, Colorado 7250 against 6750, Indiana 12,500 against 13,850, Michigan 55,800 against 55,450, Mississippi 53,900 against 50,600, Montana 21,450 against 21,550, New Mexico 104,150 against 104,100, New York 14,100 against 13,900.

Bureau Report Details Big Production in May

Reaching the highest level since February, 1942, crude oil production in May averaged 3,995,000 barrels daily, 28,000 barrels above April and 440,000 barrels more than was brought out in May, 1942, it was disclosed during the week by the Bureau of Mines.

Major source of the increased supply was Texas, with a gain of 74,600 barrels daily over April, with the Gulf Coast accounting for about two thirds of the increase, in part offset by a decline in East Texas. Higher production was also reported for a few other states, but the gains were small in comparison with the substantial declines in Kansas, Oklahoma and Illinois.

Drilling

The bureau reported a small gain in drilling, as measured by total completions, and noted that the number of dry holes increased but the total initial production of completed wells was larger.

Daily average demand for domestic crude oil was 3,962,000 barrels, the report showed, about 3000 barrels below April. Total stocks of crude amounted to 253,628,000 barrels at the close of the month, a gain of about 1,000,000 barrels.

Average crude oil runs to stills amounted to 3,710,000 barrels daily, a decline of 22,000 barrels from April. The gasoline yield increased from 35.3 to 36.4 percent, and the residual yield dropped from 30.5 to 29.3 percent.

The bureau found the total demand for motor fuel in May to be 54,100,000 barrels, or 2 percent under the corresponding month last year. Stocks of finished gasoline declined 5,500,000 barrels, totaling 73,137,000 barrels May 31 compared with 87,451,000 barrels on the same date in 1942. Demand for refined products was substantially greater in May than had been anticipated, the bureau commented, and resulted in a decline of about 3,500,000 barrels in total refined stocks.

Production for the month, the bureau reported, included 123,854,000 barrels of crude oil, against 119,000,000 barrels in April, and 7,490,000 barrels of natural gasoline, etc., against 7,371,000 barrels, a total production of 131,344,000 barrels compared with 126,371,000 barrels.

Stocks

Month-end stocks included 243,880,000 barrels of gasoline-bearing crude against 242,934,000 barrels April 30; 9,748,000 barrels of heavy crude in California against 9,674,000 barrels; 5,407,000 barrels of natural gasoline against 5,425,000 barrels, and 230,962,000 barrels of refined products against 234,441,000 barrels, a total of 489,997,000 barrels against 492,474,000 barrels.

Among the important items of production were: Motor fuel, 48,482,000 barrels; Kerosine, 6,511,000 barrels; distillate fuel oil, 16,075,000 barrels; residual fuel oil, 33,732,000 barrels; lubricating oil, 3,281,000 barrels; wax, 63,840,000 pounds; coke, 105,000 short tons; asphalt, 583,100 short tons; still gas, 26,485,000,000 cubic feet.

Bureau of Labor Statistics' figures placed the price index for petroleum and products in May at 62.5, compared with 62 in April and 59.1 in May, 1942. The crude-oil capacity represented in the report was 4,544,000 barrels, giving an operating ratio of 82 percent, compared with 81 percent in April and 74 percent in May of last year.

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For all these little boys, then—and their mothers—and their soldier-fathers—LET'S PRODUCE MORE, *FASTER!* They are depending on us for the ammunition, equipment, and supplies that mean a quicker Victory.

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11744'	46	5½"
10875'	30	7"
10500'	33	7"
10419'	33	7"
10000'	48	5½"
10000'	15	5½"
9800'	40	5½"
9700'	106	5"

WHETHER YOU'RE DRILLING deep or shallow wells, B and W Guides will help you prevent fluid migration and reduce the danger of costly re-cement jobs. Our Bulletin 102 gives complete information on their usages. *Send for your copy.*

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PIPE LINE REVIEW

Last Joint Welded On Big Line to East

Made, as one pipe line man put it, "in the only bell hole on the entire line with a plank floor in it," a weld at Phoenixville, Pennsylvania, on July 19, in the Big Inch validated the 164,113 which has preceded it in the process of linking pipe joints into the 1253 miles of 24-inch crude oil carrier which less than a year previous was only a plan. Symbolizing the completion of the line to the point where the two 20-inch branches were ready for tying into the Phoenixville station manifold, this weld was made the occasion for a brief ceremony at which were present representatives of the 11 participating oil companies, leading industrialists, and personnel of the companies supplying much of the material for the line.

Welcomed to the state and the site, near historic Valley Forge, by James H. Duff, attorney general of Pennsylvania, the principal guests were introduced by W. Alton Jones, president of War Emergency Pipelines, Inc., Col. Keith Morgan, speaking for Under Secretary of War Patterson, pointed out that the Big-Inch is in itself a most important weapon in the present action in the Mediterranean, and will be an even more potent one in the invasion of Europe to come.

Deterred at the last moment from attending, Secretary of Commerce Jesse H. Jones was represented by Charles B. Henderson, chairman of Reconstruction Finance Corporation. He stated that "the war can be won or lost with oil or the lack of it. This Big-Inch and the 20-inch also now under construction will go a long way toward insuring our success; furthermore, it will furnish oil for heating homes and factories on the Eastern Seaboard."

Following alignment of the pipe at the junction of main with manifold, Harold L. Ickes, Petroleum Administrator, dedicated the line, pointing out that "in the effort to insure and to increase the flow of fighting oil directly to our fighting men, we are faced with the necessity of producing, refining and delivering the oil for war without a definite goal to be met, a known challenge against which to plan and gauge our efforts. We must produce increasing millions of barrels of aviation gasoline, motor fuel for trucks and mechanized battalions, fuel oils for ships and tanks, against the practically limitless demands of uncertain battle requirements. We can thus have but one goal—to produce and deliver more and more and more—in the savage hope that all of the oil we can produce will be enough."

Replying to Ickes' citation of War Emergency Pipelines for the efforts which rushed through the Big-Inch in record time, W. Alton Jones stated that "today, as the Big-Inch stretches its full length into the oil-thirsty East, the petroleum industry is on the threshold of bringing daily to war factories and to shipside at the ports of embarkation for war, more petroleum than has ever before been delivered to the East. That volume . . . will increase as we move into the fall and gain the first benefits of the second emergency pipe line now under construction."

The ceremony at the final weld also included a radio dramatization of the work, with a brief history of the project from its initial planning by the organization headed by W. Alton Jones, its unfailing advocacy by Secretary Ickes, and the actual start of construction at several points on the first leg between Longview, Texas and Norris City, Illinois.

Two East Texas Fields Get Line Outlets

Two Paluxy oil fields in Wood County, which has been the most active drilling center in the East Texas basin for more than a year, received their first pipe-line outlets the past week. The Coke field, with 28 wells yielding 25-27 gravity oil, gained its outlet through completions of Talco Pipe Line Company's 30-mile 6-inch carrier to Talco Asphalt & Refining Company's Mount Pleasant refinery. The latter contracted to purchase 2,000,000 barrels from Amerada Petroleum Corporation, and other producers sell their allowable on the same price basis.

Central Pipe Line Company, with headquarters at Cleveland, Ohio, began serving the 19 flowing producers in the Quitman field through a 22-mile combination 4- and 6-inch extension to Hawkins field, where connection is made with its line that terminates in the East Texas field. Quitman oil averages 41-43 gravity with a trace of sulphur, but may qualify for entry into the Big-Inch pipe line system.

Light Products Output, Stocks Decline in May

Daily average production of natural gasoline and allied products decreased in May to 9,877,000 gallons from 10,039,000 gallons in April, but remained well above the 9,102,000 gallons produced daily in May, 1942, according to the monthly report of the Bureau of Mines.

Substantial decreases in production occurred in the Eastern States and Louisiana inland, the bureau found, and the greatest relative gains were shown in Arkansas and California.

Production during the month included 168,966,000 gallons of natural gasoline against 162,792,000 gallons in April; 53,634,000 gallons of cycle products against 54,096,000 gallons; 12,600,000 gallons of iso-butane at natural gasoline and cycle plants against 12,474,000 gallons; 70,980,000 gallons of other liquefied petroleum gases at plants against 71,820,000 gallons; 17,136,000 gallons of liquefied refinery gas at refineries against 15,456,000 gallons, and 8,400,000 gallons of benzol, the same as in April.

Stocks declined 756,000 gallons during the month, through a reduction of inventories at refineries from 111,720,000 to 108,612,000 gallons which more than offset an increase at plants and terminals from 116,130,000 to 118,482,000 gallons, it was stated.

Do you want THIS to happen in America?

It is happening at this very hour in countries conquered by the Nazis and their satellites. Enforced labor in the field and in the factory is one of the lesser sufferings that come from Nazi kultur. Thousands in Greece and the Balkans are slowly starving to death, for the Nazis have stolen their food. Thousands in Norway suffer in below-zero temperatures, for the Nazis have stolen their clothing and their fuel.

Let us make sure of preserving the bountiful blessings of our way of life: freedom of religion, freedom of speech, and our free enterprise which has given us in abundance the necessities and luxuries of adequate living.

Many of us can't fight the Nazis and the Nipponese at the front lines. But we can help clothe, feed, and arm our boys who are doing the fighting by buying War Savings Bonds until it hurts. Even this won't be a sacrifice, for our government guarantees to pay the face value of these bonds plus a good rate of interest—thus giving us cash after the war to buy wonderful new products in a new age of synthetics and chemurgy.

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International Developments

Extensive Geological Work Under Way in Canada

Extensive exploration of the geological possibilities of northeastern British Columbia, and the examination of the coal areas of Vancouver Island are projects included in the Dominion and Provincial governments' field work this year, it is announced by E. C. Carson, minister of mines.

"Dominion and provincial government parties have begun geological mapping and investigations which are directed toward the discovery and investigation of deposits of war minerals, petroleum, and coal," he said.

"Much of the work is to be done this year in northern British Columbia in the area served by the Alaska military highway, or which may become tributary to the highway if lateral roads are built."

He pointed out that the work would add materially to the geological knowledge of that part of the province.

Pacific Petroleums to Do Work in Kinsella Field

Pacific Petroltums Ltd.'s new information at the annual meeting at Vancouver, B. C. was that the company has arranged to participate with Anglo-Canadian Oil Company in the development of acreage in the Kinsella field and has become associated in the Kinsella operations.

N. R. Whittall, president, confirmed previous reports that although debts of Pacific Petroleum have been cleared off and the company is now in a good cash position, it is not proposed to discuss dividends until it is certain that company funds will not be required to drill out proven sites held in Turner Valley.

One well is now being drilled with the aid of Wartime Oils Ltd. and directors are hopeful that remaining sites will also be drilled with aid of funds supplied by the government company.

Meantime, the company plans to continue to round out its activities by becoming interested in development of new fields.

Rigging Up Rotary for Test West of Calgary

Okalta Oils Ltd. has completed rigging up of rotary equipment at Okalta-Morley 1 well, the former Hector-Norcon well located on onsurveyed territory 5 miles west of the Indian village of Morley, 40 miles west of Calgary. The hole is bottomed at 1,490 feet. Drilling with rotary will commence as soon as weather conditions permit hauling in coal for fuel, probably within the next few days. The Madison lime obpective is looked for around 3000 feet.

In the central west flank of Turner Valley, locations have been staked for four Okalta wells. No. 12, in 24-19-3w5th, has derrick up, boilers rigged, and will have drawworks in within a few days. No. 13, in 36-19-3w5th, has cellar and foundations complete. These two wells will be drilled with Okalta Oils rotary rigs. No. 14 site is in 18-19-2w5th, while No. 15 site is in 6-19-2w5th. It is understood that plans call for the drilling of No. 14 with the National Drilling Company rotary and No. 15 with the Commonwealth Drilling Company rotary.

Operations Being Expanded By Canadian Company

Phillips Petroleums Ltd., whose current activities consist of a substantial interest in the Maryland well in Turner Valley in Alberta and an interest in the drilling program and reservations of General Petroleums (Kinsella) Ltd. in the Kinsella area, has branched out to the Vermilion oil field and the Cypress Hills of Alberta. At Vermilion the company, according to announcement, has acquired under option 160 acres and a paid-for drilling contract for one well to be drilled thereon about July 1. The Vermilion acreage consists of the southwest quarter of Section 28 50-5w4th, located on the east edge of the current producing area, and one mile east of the initial Cannar Oils' well-sites. Under the 10-acre spacing plan in effect, Phillips has 16 potential locations in its Vermilion tract.

In the Cypress Hills area, in the southeastern corner of Alberta, Phillips has acquired an option on a reservation totalling 20,000 acres, located near the post office of Thelma, (Twp. 7, Range 2w4th), and south of the easterly portion of McColl-Frontenac's 600,000 acre reservation. Geological work will be done in the area within the next 90 days, and if the data is favorable, a well will be drilled within the next six months.

Canadian Oil Sand Plant Will Reopen

L. R. Champion announces that the oil sands separation plant and refinery at Bitumount in the McMurray district will be reopened. The plant has a capacity of 322 barrels a day.

Champion said he and his associates had acquired the holdings and patents of the International Bitumen Company, and had formed a new company to be known as Oil Sands, Ltd.

The company's holdings, comprising 3800 acres adjacent to the Athabasca River, is about 50 miles down river from McMurray.

Champion said machinery and equipment have been acquired and the plant will be renovated and put into production as soon as equipment could be shipped to the site.

When in production the plant provided diesel and road oil and asphalt paving and roofing products. Test holes put down in the acreage show the oil sand to a depth of 250 feet.

Dry Gas Discovered in Fort Norman Area

British Columbia officials have disclosed discovery of dry gas in Fort Norman area, where United States Army engineers drilling for water discovered the gas and asked for the right to drill for it for fuel. The required permit has been granted under the usual royalty basis of 15 percent.

Wartime Exploration In Canada Extensive

War-stimulated search for oil in Canada is not confined to western Canada, but some exploration and drilling has started in the Atlantic Coast provinces of Prince Edward Island and Nova Scotia. Socony-Vacuum Oil Company and Cities Service Oil Company are testing at 12,000 feet in waters off Prince Edward Island, while in Nova Scotia a Calgary oil operator, S. C. Nickle, has a license to operate on an 864-square-mile block north of Halifax.

In Alberta development in the Vermilion field by Canadian National Railways' subsidiary, Cannar Oils, and some smaller operators, has brought some drillings to the oil sands. In the Athabasca area south of the tar sands, wells have intersected the oil saturated sands at 1655 feet. The Athabasca field is considered to show possibilities for a new oil field. Two other areas in Alberta, the Taber and Ram River areas, are being drilled for oil, but to date have not shown great commercial promise, although both fields are too young to draw any conclusions.

Phillips to Operate In British Columbia

Phillips Petroleum Company has entered British Columbia, registered as an extra provincial company. No details are available regarding the plans of the company, and it is assumed that its decision to incorporate in British Columbia is associated with developments in the northern territory in connection with national defense projects.

Phillips Petroleum Company, according to its incorporation papers, had paid up capital of $139,463,122.35. Registered head offices of the company are at 19-21 Dover Green, Dover, Delware, and extra provincial offices have been established at 1118 Langley Street, Victoria, B. C.

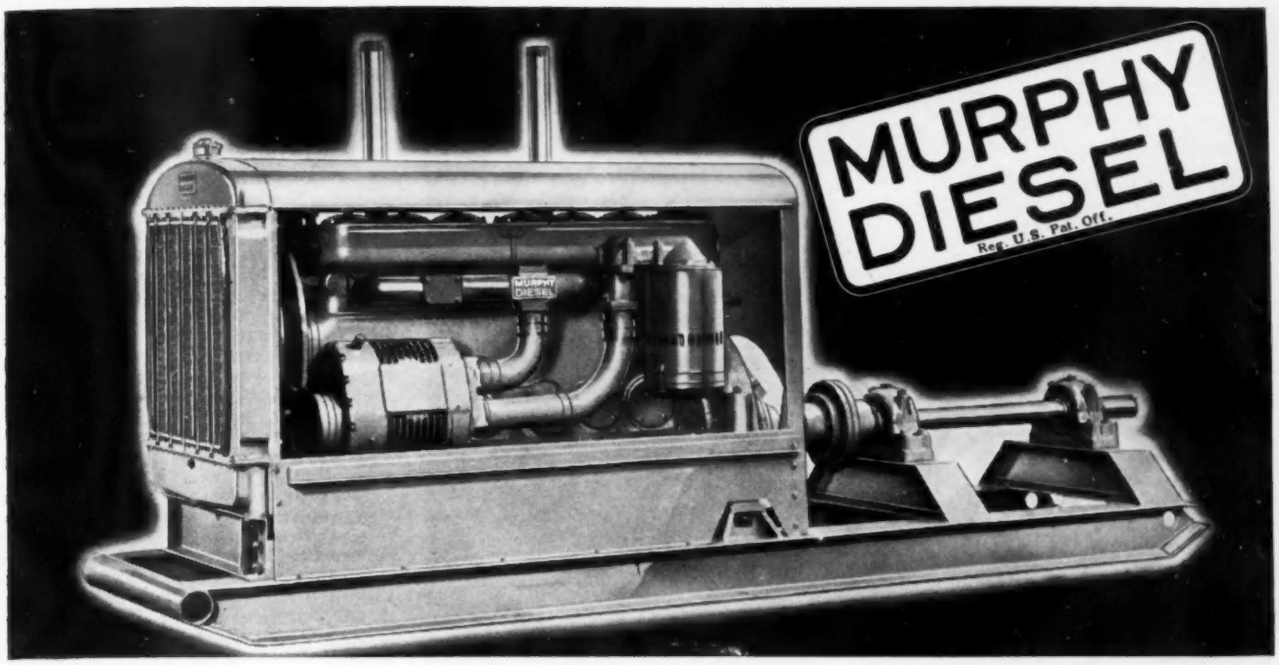
Royalite Oil Is Active In Alberta Mountains

Royalite Oil has begun drilling for oil in the mountains 65 miles west of Rocky Mountain House, Alberta, and 6 miles west of Nordegg. Survey parties are at work in adjacent hills, looking for other likely locations.

Several companies have been drilling around Rocky for 5 or 6 years past. Home Oil Company drilled for two years about 80 miles northwest; the Ram River Oils has drilled in several places and now is reported to have definite prospects of finding oil in paying quantities at its present site, 30 miles west of town.

Altoba Company drilled on the Clearwater river, 70 miles southwest of town, for Calgary Gas Company, in search of gas for the Calgary city supply, and has capped the well. Directors say this test well has assured them a plentiful supply of gas if the present Calgary supply ever runs short.

There has been talk of oil since the first homesteader came into this district. Thirty years ago Alberta Associated Oil Fields drilled a well 20 miles



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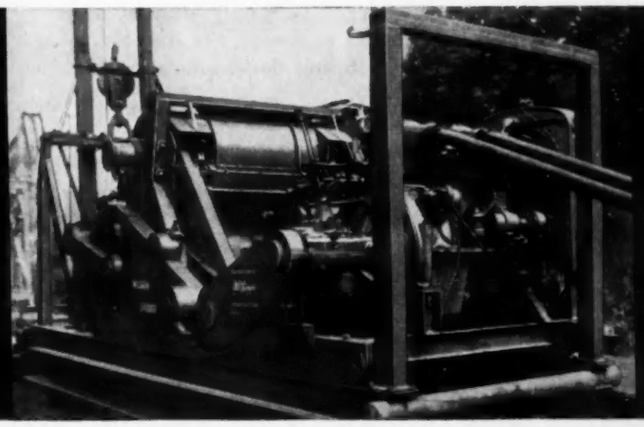

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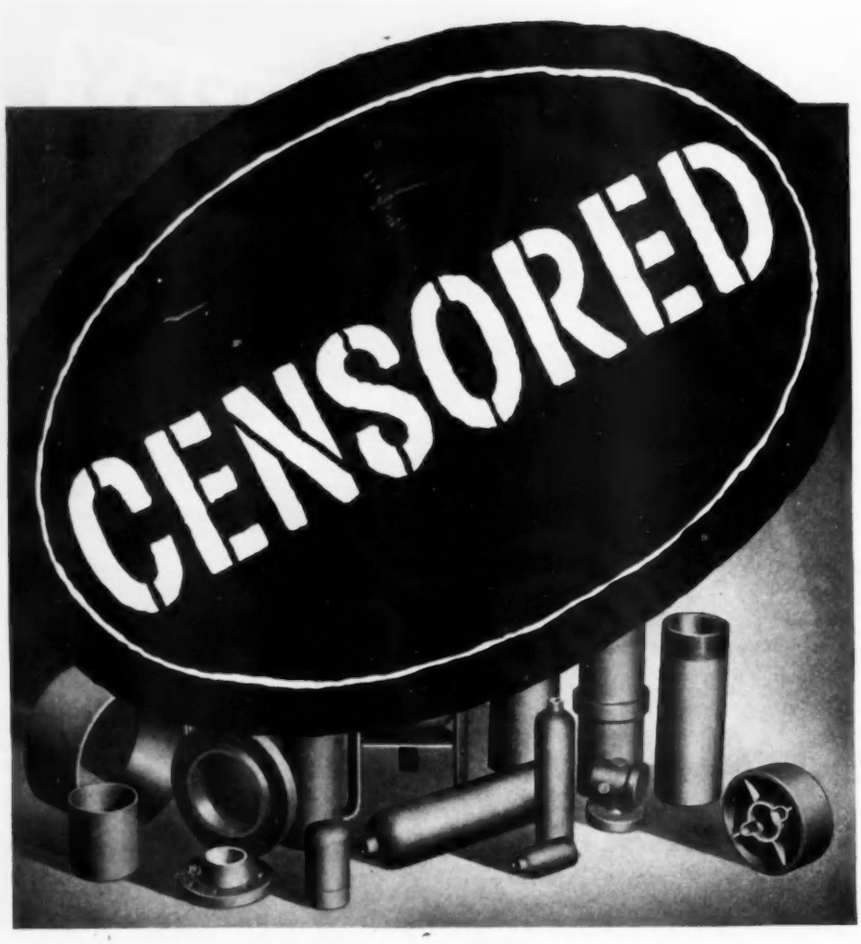

Above is a blackout illustration of the products of Harrisburg Steel Corporation for the U. S. Army, U. S. Navy, and U. S. Air Corps which includes [redacted], with [redacted], and [redacted] and also

In the meantime Harrisburg is developing in its laboratories an even more complete line of quality seamless and drop forged steel products than those for which it was noted prior to Pearl Harbor. Our service organization of Engineers, Metallurgists, Chemists and Designers is now at the disposal of our A. V.* customers — for research and development work.

*After Victory.

HARRISBURG STEEL CORPORATION

HARRISBURG, PENNSYLVANIA

west of Rocky, near the C. N. R. siding of Horburg, and found oil but could not control the shifting sidehill sand that filled the well as fast as it was drilled. The company abandoned the site but has kept the leases. Surveyors have been working all over the district for the past 10 years.

The wet season of 1942 greatly slowed the drilling, for when machinery has to be trucked from 30 to 60 miles there is often a delay of weeks. This spring Ram River Oils was held up for more than a month, waiting for equipment for acidizing and testing. Much road work has been done by the oil companies, but much more will need to be done to make all-weather roads.

Producer Gas Used in 90% Of Swedish Railway Busses

In April of this year, the State Railways of Sweden were using producer gas, obtained from wood, for 90 percent of the motor vehicles they operated.

At that time, the routes covered by the motor vehicles had been reduced to 4625 miles from the 5889 miles covered at the beginning of this year.

On January 1, 1943, there were in use in the railway system 472 busses and 87 trucks, with traffic a little less than half as heavy as before the war.

London Busses Operate On Producer Gas

More than a score of busses in service on routes in East London now are operated by producer gas units, under the program that calls for extensive conversions to the use of solid fuels instead of motor fuel.

The London Passenger Transport Board's program will involve conversion use of producer-gas equipment of 550 busses in service in the central district and in country areas.

The busses have seating capacity of 48 passengers. Special service stations constructed adjacent to established garages are being opened to handle the stocks of anthracite required to generate the gas and to provide facilities for servicing the units. Each bus burns about 1 ton of anthracite per week.

Eire Uses Producer Gas More; Gasoline Scarcer

The past two months have brought further tightening of the consumption of gasoline in Eire, along with increased use of producer-gas equipment, in reflection of the increasingly severe shortage of motor fuel.

Half of the long-distance busses were taken off the roads at the beginning of May, this year; and since that time, no allowances of gasoline have been made as previously to clergymen, doctors, and veterinary surgeons engaged in city services.

With stocks of gasoline badly depleted, issue of gasoline allowances for May was suspended except for essential services. Only a fraction of normal monthly issues can be supplied from present stocks, and there is no prospect of early replenishment of the stocks.

Over 1000 commercial vehicles have been equipped with producer-gas equipment, and additional use of such equipment on a large scale is being undertaken.

U. S. Field Operations

Illinois Basin

Four Fields Opening In Edwards County

Illinois interest was centered in Edwards County where four wildcats have opened new fields. Shell Oil Company appears to have a pool opening well in Wabash County. Coles County wildcat is completed as a light producer. Magnolia opens a new field in Jefferson County.

First National Petroleum Trust's Myers 1, NE NW NW 11-1n-14w, a short distance east of West Salem, Edwards County, flowed 767 barrels of oil in its initial 24-hour test. It is producing from the Lower O'Hara lime at a total depth of 2873 feet.

Five miles west of West Salem Mabee Oil & Gas Company's Cowling 1, SW NE SW 20-2s-14w, recovered 460 feet of oil on a 15-minute drill-stem test of the Aux Vases sand at 3002-47 feet, and was due for completion.

Midstate Oil Company's Coad 1, NW NW NW 13-3s-10e, another wildcat, was being put on the pump after swabbing 29 barrels of oil and 20 barrels of water in 24 hours from Biehl sand at 1986 feet.

Another pool opener in Ryan and Fortner's Ralston 1, E½ SW SE 9-1n-10w, which flowed 609 barrels of oil in 23 hours after casing was perforated in McClosky at 3340 feet.

Wabash County: Shell Oil Company has begun completion of Thrapp 1, SW SW NW 29-1n-12w, where casing was set after sand saturation was found at 2378 feet. On a 15-minute drill-stem test gas was recovered in 7 minutes and oil began flowing in 10 minutes. The test is in wildcat territory. The well Friday flowed 155 barrels of oil and some water in 11 hours.

Coles County: Anthony S. Keating's Uphoff 1, SE NW NW 25-12n-7e, ½ mile south of Mattoon, pumped between 12 and 14 barrels of oil in its most recent 24-hour test. The test, a wildcat, is producing from Aux Vases sand at 2693 feet.

Jefferson County: Magnolia Petroleum Company's Badgett 1, SW NE NE 18-3s-3e, 2½ miles northwest of the King pool, swabbed 48 barrels of oil in 24 hours, with a trace of water. It is producing from the Aux Vases sand. Total depth is 2693 feet.

Kentucky

B. B. Hamilton et al A. B. Sellers 1, SE NW 14-N-24, wildcat two and one-half miles northwest of Sebree, in Webster County, was waiting on cement squeeze to retest Tar Springs sand at 1872-92 feet. It had only water on initial test when plug was drilled.

W. R. Walter and Oil Carriers, Inc., H. L. Cokes 1, NW SE 8-N-23, wildcat, was drilling at 1328 feet.

Henderson County: Kingwood Oil Company's White 1, NW SE SW 11-P-24, wildcat 4½ miles southeast of Henderson, abandoned at 2515 feet. Starting at surface elevation of 402 feet, Upper Glen Dean was topped at 1722 feet, and Ste. Genevieve series at 2248 feet.

Union County: Trans-Tex Oil Company's Wheatley 1, NE NE 14-O-21, wildcat ½ mile north of Waverly, was drilling at 1420 feet. Same operators' Mary Burbank 1, SE 20-O-17, is a wildcat location five miles west of Spring Grove.

Sinclair Prairie Oil Company's Hunter 1, NE NW NE 3-O-18, wildcat 4 miles west of Uniontown, was drilling at 1217 feet.

Indiana

A. J. Walker's Arthur Seifert 1, NW NW NW 20-6s-12w, Posey County, was drilling at 2160 feet. Starting at surface elevation of 386 feet, Waltersburg section at 1852-66 feet showed recovery of 80 feet of clean oil, 220 feet of oil-cut mud and 60 feet of drilling mud and no water on one hour drill-stem test.

S. C. Yingling's Eckhoff 1, SE NW SE 21-6s-12w, wildcat, was abandoned at 2741 feet. Starting at surface elevation of 397 feet, Ste. Genevieve series was topped at 2589; McClosky break at 2661-68 feet was dry, and St. Louis was topped 2728 feet.

Kansas

Stafford County Discovery Yields 3000 Barrels Daily

Skelly Oil Company's Stafford county pool opener, Campbell 1, SW SE SW 34-24s-13w, is nearing completion as one of the best discoveries in the state for several weeks. Producing from the Arbuckle lime pay topped at 4417 feet, the well flowed enough on tests to earn a potential rating of 3000 barrels per day from the Kansas Corporation Commission.

Meanwhile in the same county, G. K. Harris has extended the Leesburg pool to the north with Mather 1, SE SW SE 1-25s-13w. On a drill stem test of Arbuckle lime, topped at 4168 feet, the well showed 720 feet of oil in 25 minutes. Operator is running pipe for a test.

McPherson County: Westgate-Greenland's Johnson 1, C S¼ SW NW 4-18s-1w, two miles southeast of the Roxbury South pool, recovered a show of oil in chat topped at 2732 feet and prepared to drill stem test. Hole was bottomed at 2740 feet.

Ellis County: Coralena Oil Company's Galthart 1, SEc 16-12s-19w, a Lansing-Kansas City lime pool opener, has been given a state potential of 275 barrels per day. The pay topped at 3500 feet was treated with 2000 gallons of acid. Total depth is 3541 feet.

Russell County: A quarter of a mile southern extension has been given the Williamson pool by Stanolind Oil and Gas Company's Newcomer 1, SW NE NE 10-14s-14w. After a drill stem test which showed 2700 feet of oil in two hours from the Sooy sand topped at 3253 feet, the well was given 3000 gallons of acid through perforations. Total depth is 3260 feet.

Saline County: Wolf Creek Oil Company's Karber 1, SW SE 9-16s-1w, which is a Kansas City lime pool opener, has earned a temporary potential of 86 barrels daily. The well is yielding 33 gravity oil from lime topped at 1989 with total depth 1998 feet.

Oklahoma

Pauls Valley Production Extended To South

The Pauls Valley pool of Garvin county has been given an excellent southern extension by Stanolind Oil and Gas Company's Cashion Community 1, NW NE SW 31-4n-1e, which had several shows in the Pennsylvania sand. Perforated through casing, the well flowed 823 barrels in seven and a half hours and then was shut in to take a potential. Perforations were made from 4044-50 feet, 4068-78 feet and 4114-29 feet.

Osage County: Northern Ordnance Inc. is deepening Davidson 1, SW SE SW 6-20n-12e, which was damaged by a heavy shot in the Bartlesville sand at 1506-22 feet. In the early stages the well showed for approximately 40 barrels daily. The discovery was made by W. A. Davidson who sold his 160 acre lease to Northern Ordnance for $100,000.

Creek County: G. S. Cole et al's Sewell 1, NW SW SE 27-16n-10e, a semi-wildcat showing good production from the Dutcher sand is focussing interest on the southeastern part of the county. Pay was found in the Dutcher at 2640 feet and after the hole was drilled to 2646, the well yielded 120 barrels per hour for several hours and then was shut in for storage and connections. Operators planned to deepen for additional pay.

Payne County: Another small pool for Payne County is in prospect with Flynn & Morgan et al's Sun 1, NE SW NE 6-19n-5e, where the Misener sand showed for production at 3704-08 feet. Oil reported as 44 gravity was bailed from the hole. Operators plan to drill to the Wilcox sand before making additional tests of the Misener.

Noble County: Deep Rock Oil Corporation plans to drill a wildcat well, Hayden 1, NE NE NW 29-24n-2e, in Noble county, nine miles south of Ponca City. The block of acreage on which the well will be drilled is in sections 20, 21, 28 and 29. Several other companies are contributing to the test. The well is scheduled for the Wilcox, expected near 4500 feet. A dry hole in SW SW NE 14-24n-2e, drilled to 4310 feet, is the only previous venture in the township.

West Texas

Yates Field Edge Test Has Ordovician Show

Outlook for Ordovician production on the southwest edge of the Yates field was revived by Standard Oil Company of Texas' Smith-Douglas 1, when 3-hour drill stem test through perforations at 8697-8717 feet, in Simpson-Ellenburger contact, yielded 90 feet of oil and 450 feet of oil- and gas-cut mud. Swabbing test is scheduled before initial treatment with 5000 gallons of acid.

Phillips Petroleum Company's Price 1, southeastern Pecos County wildcat and a prospective producer from broken

pay below 11,555 feet, was drilling dolomite and shale at 11,895 feet, within 891 feet of the district's depth record. It has entered the Ordovician series. Information gained from this wildcat has caused most of the acreage in the southeast part of the county, and in the north part of Terrell County to be leased. Humble Oil & Refining Company recently acquired a solid block of about 35 sections in Terrell County. Lease play has lately shifted westward across Southern Pecos County into Brewster County, where Floyd C. Dodson et al's Texas American Syndicate 1, Bissett Dome area, abandoned in 1938 at 7785 feet in Simpson, topped at 6733 feet with elevation of 4233 feet. Dodson et al have sold lease spreads to Humble Oil & Refining Company, Sinclair Prairie Oil Company and others to finance deepening to Ellenburger, if junk can be recovered.

Reagan County: Amerada Petroleum Corporation's Johnson 1, a mile northwest of the Barnhart field discovery and structurally high, entered Ellenburger saturation at 9102 feet, and made small flows when tested through drill pipe at 9075 feet and 9100 feet. Another test was pending at 9127 feet.

Winkler County: Sid W. Richardson et al's Walton 4, ¾-mile southeast of the Ellenburger discovery producer for the Keystone structure, installed rotary to deepen from regular oil zone at 3341-76 feet to Clear Fork. The deep discovery logged porosity and saturation in Basal San Andres at 4640-90 feet, and also in Clear Fork, topped at 4826 feet. Richardson et al's Walton 10-E, south offset to the Ellenburger discovery, will be carried to the deeper pay. Sinclair Prairie Oil Company's Walton 4-A was the first of a half dozen scheduled deep tests for the immediate area. In the Wheeler-Ellenburger pool, Stanolind Oil & Gas Company and Shell Oil Company's Wheeler 2, ½-mile south of their discovery, is the third Ellenburger test for the partnership.

Reeves County: L. H. Wentz et al's Rounsaville 1, Casey Draw area, entered Delaware lime at 4130 feet and sand at 4228 feet with elevation of 3635 feet, and was drilling sand at 4280 feet.

Howard County: Cosden Petroleum Corporation's Jones 1, southeast offset to the Vincent pool discovery pumper, was drilling below projected pay level at 4120 feet without indicating free oil. Some porosity was logged at 3969-72, 3980-85 and 3990-93 feet.

Stephens County Wildcat Has Marble Falls Showing

Carey & Carey's Cretsinger 1, SP 2, Block 1, ⅛-mile north by west of a Northeastern Stephens County prolific wildcat gasser, entered Marble Falls sand, carrying oil and gas, at 4066-78 feet, 5 feet high, and will complete through perforations with 5½-inch at 4125 feet, 25 feet off bottom. Ben F. Read, trustee's Corbett 2, west offset to the Corbett Ranch pool discovery in Marble Falls and 1½ miles southwest of above area, was drilling at 3980 feet, having entered Bend and Marble Falls at 3378 feet and 3919 feet, respectively. Trustee's Corbett 3, north offset to discovery, topped Bend at 3368 feet, and was drilling lime at 3640 feet.

Jones County: Semi-wildcats involving Bridwell Oil Company and Leland Fikes' Jennings 1-D and Harold Neely's Hayden 1 abandoned at 2163 feet and 2370 feet, respectively. Watchorn Oil & Gas Company's Ray 1, wildcat, abandoned at 2825 feet.

Shackelford County: Shell Oil Company's Matthews 1, Ordovician wildcat, abandoned in Ellenburger at 4582 feet.

Palo Pinto County: W. K. Gordon et al's Conway 1-A, T&P 59, Block 2, wildcat, is awaiting orders with rated flow of 835,000 feet of gas daily at 3969-73 feet.

North Texas

Two Strikes Assured Near Wichita Falls

Oil discoveries immediately south and northwest of Wichita Falls became assured when 2 Ellenburger failures plugged back to the Strawn series. Consolidated Oil Company's Laukhuf 1, southwest corner of Block 5, Cherokee County School Lands, and 1¾ miles northeast of Asylum deep pool, flowed a steady stream of oil into pits on 8-minute test through 5½-inch pipe after using 1000 gallons of acid through perforations at 4415-32 and 4440-65 feet. This wildcat logged non-productive Ellenburger at 5327-5401 feet, and when plugged back to 5105 feet yielded a small amount free oil, but a 175-quart nitro shot at 5065-5100 feet collapsed pipe. Decisive test of this lower oil zone was not obtained. The company has a block of 2300 acres.

Continental Oil Company, A. R. Dillard and H. B. Dudley's West 1, G. W. Scott Survey, 2 miles northwest of Wichita Falls, swabbed 60 barrels of oil with only a trace of drilling water on last test, and may shoot with 20 quarts of nitro. Production is from broken sand at 4345-58 feet, having plugged back from Ellenburger at 5520-5678 feet. The partnership holds lease on a 2000-acre block. These discoveries are 5½ miles apart.

Shallow Strike: Benson Brothers and Dennis' Cooke-Texaco 1, A. Patterson Survey, A817, 5 miles northwest of Muenster, indicated a new pool for Western Cooke County in filling 400 feet with oil in 12 hours after drilling plugs from 7-inch at 1120 feet. Production is from sand at 1148-63 feet. This wildcat proved dry in Ellenburger at 1650-1702 feet, then was plugged back to 1170 feet.

Foard County: The Texas Company's Nichols 1, NE SE H&TC 298, Block A, is starting on 8000-foot depth contract to try for Ordovician production on geophysical prospect, and ¾-mile southeast of 3729-foot failure drilled in 1930 by The California Company.

Cooke County: Fred Snuggs et al's McGeorge-Snuggs 1, Section 64, a mile south of the Winger sand sector of the Walnut Bend field, pumped 118 barrels of 35-gravity oil on 12-hour test from Strawn perforations at 4285-99 feet, having tested dry in Winger sand and Simpson, topped at 5505 feet and 5730 feet, respectively. Walnut Bend field was enlarged to northeast by completion of The Texas Company's Robinson 1 flowing 172.51 barrels natural on 3-hour test through open tubing from perforations at 5532-42 feet and 5562-83 feet. Carter-Gregg Oil Company's Ramsey-Ohio 1 flowed 86.4 barrels on similar test from perforations at 5529-41 feet and 5556-72 feet. This Winger sand sector is the most important strike in the district this year from the standpoint of crude reserves.

East Texas

Two Edge Tests Hold Interest at Quitman

Roger Lacy et al's Cox 1, situated 4500 feet south by west of Quitman field, entered Georgetown lime at 5132 feet, 171 feet low, and was drilling at 5910 feet. Lacy et al's Rape-Johnson 1, located 3660 feet northeast of the field, was drilling Georgetown lime at 5505 feet. Quitman field has 19 wells on production, and if either of these outposts make producers the area will be the second or third largest Paluxy field in East Texas.

Amerada Petroleum Corporation and Gulf Oil Corporation's White 3, two locations north of the only failure in the field, was running pipe after logging solid oil sand at 6280-6360 feet.

Oak Grove: F. R. Jackson, Fisher and Fields' McCarley 1, prospective Woodbine producer for central Wood County, will re-set whipstock after drilling back into old hole. This wildcat lost a section of casing in trying to complete in Woodbine, topped at 5250 feet, after finding water in Paluxy at 7284-7506 feet. The partnership's Quitman National Bank 1, 1½ miles east, logged base of Pecan Chalk at 3275 feet, indicating structural dip of only 22 feet, and was drilling shale at 4295 feet.

Hunt County: Stanolind Oil & Gas Company's Caston 1, northeast offset to its Campbell pool discovery pumper in Paluxy, recovered 4600 feet of salt water when tester was used at 4670-4724 feet, and will be deepened through Paluxy for geological information. Caston 1 entered Georgetown at 4270 feet, 318 feet low, and did not cut the fault until 4518 feet to enter Paluxy series, while the discovery cut a fault in Georgetown.

Morris County: Humble Oil & Refining Company's Wright 1, 1½ miles southwest of Omaha, has reached its Travis Peak objective without shows, and was drilling sandstone at 7610 feet.

Marion County: Gulf Oil Corporation plans to drill J. D. Witt 1, L. Rufty survey, a 12,000-foot wildcat in the Mims Chapel area 11 miles northwest of Jefferson. At this depth this test would have the deepest drilling record for area. Present depth record is held by The Texas Company's Adams C-1, at Bethany in Panola County, which drilled into salt at 11,485 feet and plugged back to complete as a wet gasser in Pettit lime at 7,500 feet.

Southwest Texas

New Pay Sands Feature Activity in Scattered Areas

Setting of casing in two wildcat wells and the opening of new pay sands were featured developments in scattered counties of the southwest sector this week. The most important of these wells is in northern Bee County near the old shallow Cosden field where Mackhank Petroleum Company of Houston perforated the Carizzo-Wilcox in Freeland 1. Bottomed at 7517 feet with 5½-inch casing set on bottom, three sections were reported capable of yielding production of some type; they are at 7110-25 feet, 7210-20 feet and 7240-50 feet. This discovery, spotted in east corner of John Pace survey, A-247, is 3 miles southwest

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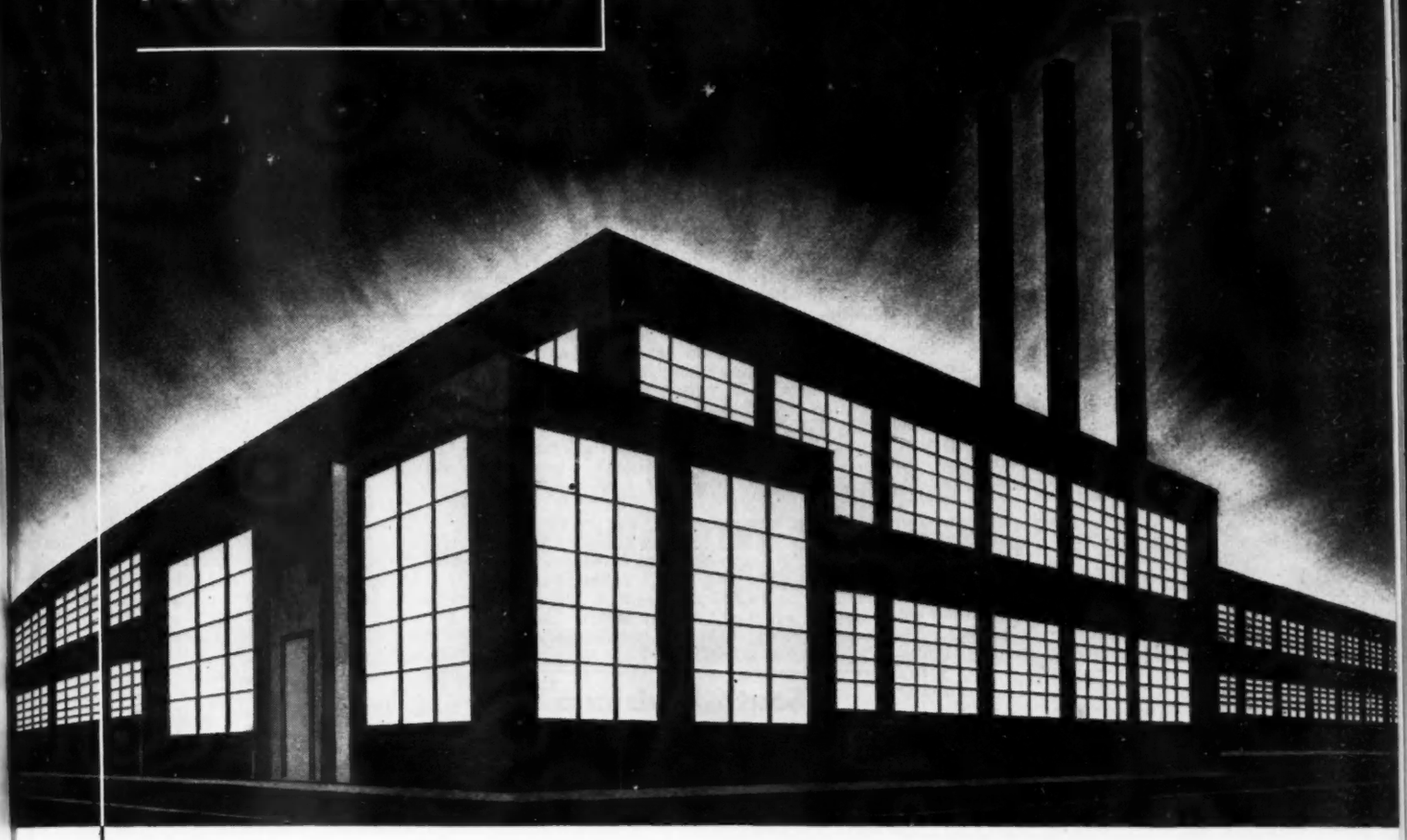

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of the North Pettus-Wilcox deep discovery and 3 miles southeast of the South Caesar field, both of which produce from the Carrizo-Wilcox.

Duval County: Magnolia Petroleum is preparing to test Hahl 12-C, wildcat one-half mile south of North Government Wells production. Casing is set to total depth of 5411 feet and a production test will be made in the 5383-93-foot section which yielded 360 feet of oil and 1480 feet of salt water on a drill stem test. The North Government Wells field produces from the 2900-foot, 2200-foot, 2400-foot and 1800-foot sand sections.

New Pays: R. W. O'Meara's Dorris 1 northwest outpost to the Gallagher field, Jim Wells County, was perforated at 4865-67½ feet and flowed 2,500,000 of gas daily with considerable distillate and salt water to open a new producing horizon. The flow was through 5/32-inch choke, the gas coming from the Frio sand. The well is botomed at 5650 feet with 5½-inch casing set to 5165 feet.

Lockhart and Davenport are testing a new sand in the Lockhart field of Starr County. Garza 1, on south flank of production, was drill stem tested at 3780-90 feet and recovered 150 feet of oil and 30 feet of oily mud. Opeartors have been swabbing the well after setting 5½-inch casing on bottom at 3790 feet. This well, located on northwest corner share 68 of de la Garza Falcon porcion 80, is bottomed in the Yegua sand, below the regular field pay.

Victoria County: Barnsdall Oil Company has completed a major northeast extension to the North McFaddin field with completion of Skarda 1. The well was perforated at 5164-75 feet and flowed 50,000,000 cubic feet of gas with a spray of distillate on open flow. The company had first attempted to complete the well in perforations at 5982-86 feet, as an oil well in a new deep pay, but failed to obtain commercial production. Total depth is 6085 feet with 5½-inch casing set to 6046 feet.

Texas Gulf Coast

Two Wildcat Tests Have Important Shows

Magnolia Petroleum Company has set casing in Anderson 1, wildcat two miles southwest of Chesterville in Colorado County. Although the hole is bottomed at 12,006 feet in the Wilcox, pipe was not cemented to the bottom but was set deep enough to test all shows encountered. Opening of at least a gas-distillate field and possibly oil is assured in the well. Two sands were picked up in the Cockfield which indicated oil production on electrical survey. Drill-stem test in Wilcox showed distillate; however, other sections in the deeper horizon also are believed capable of yielding some production. This wildcat was originally scheduled to be drilled to 11,500 feet, but was carried deeper after encountering the shows in the Wilcox.

Harris County: The Texas Company is preparing to make a flow test on Stevenson 52, east side of Humble dome, that has indicated the opening of a new and maior oil area. The hole is bottomed at 5349 feet with casing set to 5347 feet. Although detailed information has not been released, the well is credited with considerable sand section carrying oil saturation. The well is 990 feet from east line and 280 feet from south line of block B-5 of 517-acre tract in Stevenson subdivision. It is one-half mile from production.

Katy: The Katy field of Waller and Harris Counties continues as the most active field on the coast with a number of rigs in operation and others scheduled to start immediately. Sun Oil Company is preparing to drill Stewart 1 on northeast flank of the oil producing portion of the field. The location is 1800 feet northwest of Kirby Petroleum Company's Beckwith 1 oil well completed in June for 208 barrels daily.

Sun Oil Company has completed Alt 1 on south edge of Katy field as a small gas well. Drilled to 7319 feet, gas sands were found at 6540 feet, 6750 feet and 7210 feet. The well is said to have flowed around 10,000,000 cubic feet of gas daily, open flow.

Wildcat: The Texas Company has staked Barnes 1, deep wildcat three miles north of Fannett field in Jefferson County. It is on a 1315-acre tract in Manuel Chirino league. The deeper sand formations will be tested.

Shell Oil Company has amended location for its deep wildcat south of Clam Lake field, Jefferson County. The well is McFaddin Trust 16, amended as follows: start northeast corner of H. Gentz Survey 352 feet, go south along el of survey for 1700 feet, thence 350 feet east at right angles to location in T&NO Survey, Abstract 287. It is 6850 feet southeast of nearest production. The well is scheduled to be drilled to 10,750 feet, and if the objective is reached, it will be the deepest test ever put down in the area.

South Louisiana

Deep Production Being Opened at Richie

Deep production has been opened on the north flank of the heretofore unprolific Richie dome in Acadia Parish where Continental Oil Company's Acadia Parish School Board 1, 16-7s-1w, has indicated the opening of a major producing area. This wildcat has been creating considerable interest since it was reported that a sand section had been found showing for production. Perforated at 8580-80 feet, the well flowed 153 barrels of 35-gravity oil in 10 hours with 1950 pounds pressure on tubing, gas-oil ratio 1100/1. Total depth is 9909 feet with 7-inch casing set to 9237 feet. If this well holds up as a major producer more drilling is likely to ensue quickly since other companies own leases in the area.

Beauregard Parish: The recently discovered Bear field is getting more development presently than any other field on the Coast, and which has three Frio sand producers so far. The area has received another operator with Humble Oil & Refining Company preparing to drill Krause 1 in Section 28-6s-9w, contracted to 6000 feet. This well gives the field three active tests with Phillips Petroleum Company and Shell Oil Company drilling. The split-up leasehold will make development fairly rapid.

Deep Test: Gulf Refining Company is preparing to drill the deepest test yet put down in the Lake Hermitage area of Plaquemines Parish. The well is LaFourche Basin Levee, District 15, section 11-18s-25e, projected to 12,000 feet.

LaFourche Parish: Sun Oil Company is testing the 8600-foot sand on the east flank of Chacahoula dome with Mire 1, Section 69-15s-15e. Perforations were previously made at 8668-75 feet and squeezed after making some tests at deeper levels. The latest perforations have been made in the 8648-58-foot section. This dome is still yielding new pays on its flanks.

George H. Echols is making more production tests on a wildcat in the St. Garbiel area of Iberville Parish. He drilled Natalbany 1-J to 10,515 feet, plugged back and perforated at 9700-04 feet. The well flowed considerable distillate with a little gas with tubing pressure of 3350 pounds. The production is coming from a sand considerably deeper than the regular St. Gabriel field sands.

North Louisiana

Claiborne Deep Test Has Oil Sand Showings

Frank and George Frankel's deep wildcat, Muslow 1, W½ NE NW 30-21n-7w, Claiborne Parish, was coring and drilling in Lower Cotton Valley horizon where it recovered oil sand at 5533-40 feet. Previously in Upper Cotton Valley, topped at 4090 feet it showed mud cut with oil and gas in drill-stem test at 4275-4340 feet.

At recently discovered Lucky in Bienville Parish, Placid Oil Company's Nebo B-1, SW NE 13-15n-7w, quit drilling at 7904 feet. The well flowed estimated 1,500,000 feet of wet gas from Pettit lime perforations at 7024-48 feet. West of Nebo B-1, the company was drilling below 4712 feet at Nebo A-2, SW NE 5-15n-6w.

Bossier Parish: A. D. Simpson et al's Fenet 1, NW SW NE 25-21n-14w, failed in Nacatoch when it cored at 1017-25 feet, and abandoned at 1081 feet. Simpson's test had drilled as an offset to C. W. Beene's Fenet 1, NW SE NW 25-21-n-14w, discovery and shallow pumper of heavy oil east of Pine Island field.

Caddo Parish: Durbin Bond quit Simpson 1, SW SE 17-16n-15w. Pipe had been set in Gloyd lime at 5100 feet but production efforts where it had indicated distillate production proved barren.

Mississippi

Wayne County Wildcat Testing Tuscaloosa Showing

Gulf Refining Company's Davis 1, NE SE 2-9n-9w, Wayne County, has set 5½-inch pipe for production test of Eutaw and Tuscaloosa horizons where it had indicated oil production.

Lincoln County: The California Company's discovery, G. T. Smith 1, NW NW 4-7n-7e, pumped 130 barrels of heavy oil in 24 hours from deep Tuscaloosa perforations at 10,132-174 and 10,288-322 feet. The company's offset to the discovery, Hattie Smith 1, NE NE 4-7n-7e, was drilling below 7555 feet with no shows. Hattie Smith 1 will test sands encountered in G. T. Smith 1, which carried oil shows in that well but were found to be too thin for production.

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Rocky Mountain Area

Elk Basin Extension Brings Wide Activity

Yale Oil Company's Watson 1, NE NE SE 36-58n-100w, Elk Basin, encountered oil saturation only and no water, in the Tensleep at 5570 feet. This discovery extends the old Elk Basin field a mile and a quarter west and south on the Wyoming side, and a mile and a half north on the Montana side. The well, located 1¼ miles west and south of the discovery, and running 1700 feet low without encountering the water table, indicates an estimated 5000-acre area of probably productive oil land in the deep Elk Basin zone and greatly boosts reserves from the lower sands. Original estimate on reserves based on the performance of the discovery well was 45,000,000 barrels of heavy oil. The extension has tripled this and reserves are now based at approximately 150,000,000 barrels. Drilling of about 125 wells to the Tensleep on the 40-acre spacing pattern will likely follow. Already 3 have been completed and 13 others are in various stages of drilling and testing. Two of the drilling wells are scheduled to test the Madison lime which holds possibilities for production. Also saturation as yet untested, in the Embar lime immediately above the Tensleep, has been encountered in all the deep completions.

Carbon County, Montana: Minnelusa Oil Corporation's Zimmerman 1-ET, NE NE SE Section 34-9s-23e, elevation 4622 feet, made 112 barrels initial per hour from the Tensleep, topped at 4919 feet, total depth 5163 feet. Stanolind Oil & Gas Company's Dengler 1, SW NE 35-9s-23e, topped Tensleep at 5444 feet and is coring in saturation at 5573 feet, indicating a ¾-mile extension northwest of the Minnelusa outpost.

Gas Discovery Important To Northwestern Colorado

Superior Oil Company, Continental Oil Company and Union Oil Company of California's Unit 1, NW NW SE 5-3s-101w, Rio Blanco County, gauged 9.7 cubic feet of gas through 2-inch tubing, with 600 pounds tubing pressure, from perforations in the Dakota-Lakota sands at 4326-36 feet, 4350-4400 feet and 4416-26 feet. Rotary table elevation is 6088 feet. The well was originally drilled to 8558 feet in the lower Pennsylvanian, finding all horizons below the Dakota-Lakota non-commercial. It was plugged back to 4620 feet into the 8⅝-inch casing which had been set at 7313 feet.

This well is a test of the 15,000-acre, unitized block covering the Douglas Creek structure. A transmission line is being considered to serve this area and also the Piance Creek gas field which is due for additional development by Magnolia Petroleum Company. The line would serve Grand Junction and other Western Colorado towns none of which are now using natural gas. The possibilities of using gas from Unit 1 for repressuring the Morrison and Sundance sands in the nearby Wilson Creek field are also being considered.

California

Kern County Wildcat Reports 60-Foot Oil Sand

Continued coring in Western Gulf Oil Company and The Texas Company's Los Angeles Athletic Club 36-1, SW 1-32-26, a deep wildcat test northeast of Paloma field, Kern County, has developed showings of such promise that some observers have designated it a discovery of importance. Last reported depth was 11,250 feet, after sand had been logged at 11,120 feet.

Whether this saturation is from a separate structure or an extension of nearby Paloma field production, is not yet clear. The sand section, presumably Paloma sand equivalent, was picked up much lower than in the nearest wells. That obviously suggested a down-flank extension. But differences noted in sand and oil characteristics coupled with non-conforming geology are cited by engineers who support the theory of a separate pool.

Expectations for good results from a production test scheduled for late in the month are based on the fact that more than 60 feet of solid oil sand already has been cored, and that electric log and core analysis data indicate favorable reservoir characteristics, with no suggestions of water.

Los Angeles Athletic Club owns 1200 acres surrounding the test, and most of the adjacent acreage is owned by Kern County Land Company. These properties, together with all other acreage figuring in the play, are held in joint leases by The Texas Company and Western Gulf Oil Company.

Michigan

Missaukee County Wildcat Fails Despite Early Shows

Nineteen drilling permits were issued in Michigan this week of which seven were for wildcat wells, thus maintaining the stepped-up drilling tempo recently noted.

Missaukee County: Activity was given a set-back when Sun Oil Company abandoned State A1, Section 11-23n-5w, Enterprise Township, at 4596 feet, after testing with no show. This well has been active since last fall. It showed 330 barrels of fluid in 6½ hours with from 5 to 15 percent water cut, in January, from 3180 to 3300 feet, in the Dundee. It later went dead and could never be brought back. Dry offsets were drilled to the north, south, west, and southeast.

Newaygo County: Pure Oil Company started drilling an east offset to Harris 1, Section 8-14n-11w, Goodwell pool discovery, and cleared locations for two other offsets. Rapid development is indicated if these offsets confirm a sizeable pool. Production in Harris 1 was stepped up from 600 to 860 barrels after tubing was run.

GRAVIN B. CHASTAIN, field representative in PAW District 2 who has been assigned to Michigan for past year, has been transferred to the Chicago office. No successor has been announced.

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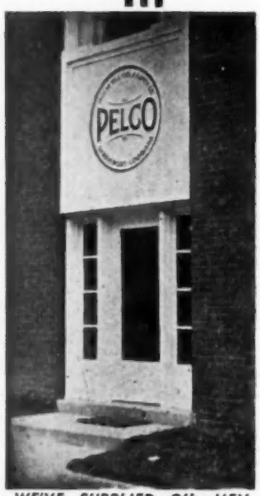

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ARKANSAS

Columbia County—Haynesville: Mid-States Oil Co.'s Beene-Beckett Unit 2, 11-20s-20w, perf Pettit lime 5430-50 ft, flow 221 bbls 12-hrs, 20/64-in, tp 255, cp 75, 5000 gals acid, td 5510 ft.

Nevada County — Stephens-Smart: McAlester's J. R. Williams C-1, sw sw sw 1-15s-20w, perf 2918-38, pump 400 bbls, 3300 ft.

Union County—Rainbow: John C. Schmidt, Tr.'s Kelly 1, ne se 9-17s-14w, perf 2649-50, pump oil, sw, no gauge, 7-in, 2865 ft, td 2910 ft.

ARKANSAS WILDCATS

Calhoun County: Placid Oil Co.'s Southern 1, se sw 22-16s-13w, abnd 5300 ft.

Cleveland County: Lion Co.'s Holderfield 1, ne ne sw 21-10s-9w, abnd 4606 ft.

Hempstead County: Barnsdall's B. Shultz 1, e½ ne ne 34-13s-26w, abnd 4938 ft.

Union County: Lion Co.'s Union 1, ne se ne 14-17s-13w, abnd 5900 ft.

COLORADO

Jackson County—North McCallum: Continental's Pollock 5, cne sw 2-9n-79w, ¾ mi nw extension, flow 192 bbls, 10.0 cu ft CO_2 gas, 7-in 5124 ft, perf 4950-5100 ft Dakota sand, td 5127 ft.

COLORADO WILDCATS

Rio Blanco County—Douglas Creek—New Gas Field: Superior's Unit Continental and Union's Unit-Gov't 1, nw nw sw 5-3s-101w, 9.7 ft gas, 2-in, 600 lbs back pressure, 8⅝-in 7313 ft, perf Dakota-Lakota, 4326-36 ft, 4350-4400 ft and 4416-26 ft, pb 4620, td 8558 ft, elev 6088 ft.

CALIFORNIA

Fresno County—Coalinga Oil Field: Shell's 186-29, sw ne se 29-19-15, pump 22 bbls 16.1-gr, 77 ft perf 2682 ft, td 2684 ft.

Standard's 99-13D, sw nw se 13-20-14, pump 96 bbls, 340 ft perf 1308 ft, td 1318 ft.

Texas Co.'s C-2, se ne sw 32-19-15, pump 50 bbls 16-gr oil, 9 water, 56 ft perf 2807 ft, td 2846 ft, pd 2807 ft.

Fresno County—Riverdale: Amerada's Brum 78-15, sw se se 15-17-19, flow 378 bbls 37-gr oil, 285,000 gas, 12/64-in, 860/1850 lbs, td 6900 ft, pd 6815 ft.

Kern County—Belridge, South: Belridge Oil Co.'s 38A-35, pump 25 bbls 11.7-gr oil, 15 water, oil sand 685 ft, San Joaquin clay 1324 ft, perf 1285 ft, td 1350 ft, pd 1258 ft.

General's Bilridge 23-11, ne ne ne 11-29-21, pump 32 bbls 16.4-gr oil, 48 water, perf 826-884 and 935-1026 ft, td 1027 ft.

Kern County—Buena Vista Hills: Standard's 89-7D, sw se nw 7-32-24, pump 42 bbls 26-gr oil, 4 water, 3165 ft.

Kern County—Cymric area: Honolulu's Fitzgerald 42A-26, pump 8 bbls 11.9-gr oil, 2 water, td 1265 ft, pd 916 ft.

Kern County—Elk Hills: U. S. Navy's 12-3G, sw nw nw 2-31-24, pump 55 bbls 23.8-gr, Scalez 2840-2915 ft, 96 ft perf 2964 ft, td 2965 ft.

U. S. Navy's 56-27S, sw nw se 27-30-24, pump 64 bbls 16.4-gr oil, 12 water, 61 ft perf 3400 ft, td 3405 ft.

Kern County—Kern Front: Standard's 51, se sw se 15-28-27, pump 26 bbls oil, 11 water, 230 ft perf 2266 ft, td 2270 ft.

Kern County—Midway-Sunset: H&T Oil Co.'s 10, ne nw nw 15-31-22, pump 42 bbls 14-gr oil, 8 water, 245 ft perf 810 ft, oil sand 591 ft, td 870 ft, pd 810 ft.

Richfield's Fairfield 12, se sw ne 11-31-22, pump 120 bbls 15.4-gr, 67 ft perf 1305 ft, oil sand 1240 ft, gray sand 1372 ft, td 1450 ft, pd 1310 ft.

Kern County—Mt Poso: Shell's Security 38, nw nw ne 16-27-28, pump 120 bbls 15.8-gr oil, 88 water, 75 ft perf 1867 ft, td 1868 ft.

Shell's Vedder 38, nw se se 9-27-28, pump 240 bbls oil, 240 water, 76 ft perf 1645 ft, Vedder 1578 ft, td 1645 ft.

Kern County—Pose Creek-Premier: Standard's 13-9, se sw nw 9-28-27, pump 5 bbls oil, 4 water, td 2830 ft, pd 2734 ft.

Kern County—Round Mountain: Crestmont Oil Co.'s Staley 10, ne nw se 8-28-29, pump 4 bbls oil, 1 water, 98 ft perf 1555 ft, td 1555 ft.

Los Angeles County—Wilmington: A. D. Mitchell's Security 1, 230 ft n, 350 e Watson and Sanderson, pump 45 bbls 14.2-gr, 107 ft perf 3626 ft, td 3626 ft.

Orange County—Coyote, East: Seven Drilling Co.'s C-2, se sw se 13-3-10, pump 250 bbls oil, 98 water, 4323 ft.

Orange County—Huntington Beach: Signal O&G Co.'s Bolsa 45-A, 3598 ft n, 1760 w swc plot C Standard's Bolsa lease, pump 195 bbls 27-gr oil, 100,000 gas, 455 ft perf 4930 ft, td 5250 ft, pd 4930 ft.

Standard's Huntington A-47, 2250 ft nw along c/l Wesley from c/l 23d, thence 990 ft sw at ra, pump 145 bbls 16.5-gr, 152 ft perf 3496 ft, td 3500 ft.

Ventura County—Timber Canyon DD: A. T. Dennison's 1, nw sw se 13-4-21, pump 5 bbls, 776 ft perf 2262 ft, brown shale 1230 ft, Miocene 1125 ft, otd 1450 ft, td 2262 ft.

Westates Petroleum Corp.'s St. Lawrence 9A, se se se 5-32-23, pump 10 bbls oil, 15 water, perf 3225-3250 ft, td 3507 ft.

CALIFORNIA WILDCATS

Fresno County—Failure: General and Pure's Sopac 81-9, 9-17-17, Huron area, Kreyenhagen 8032 ft, Eocene 8500 ft, abnd 8835 ft.

Glenn County—Failure: Superior's Dodge 2, sw sw sw 7-19-1, abnd 5882 ft.

Kern County—Failure: Petromont Oil Corp.'s No. 1, nw sw 25-28-29, south of Belridge, abnd 575 ft.

ILLINOIS

Clay County: Carter's Harper 1, c se ne 14-5n-5e, abnd 2553 ft.

Texas Co.'s Wade 1, ne se 14-5n-5e, McCl lm 2453-59 ft, 202 bbls, 2466 ft.

Franklin County: E. S. Adkins' Orient Coal Co. 2-B, sw nw ne 12-7s-2e, Tar Spgs 2065-80 ft, 50 bbls, 2080 ft.

Gallatin County: Carter's Crawford 5, nw se ne 11-8s-10e, Tar Spgs 2054-66 & 2069-74 ft, 37 bbls, 2074 ft.

Hamilton County: Texas Co.'s Meador 1, se sw nw 23-5s-6e, abnd 3400 ft.

E. V. Shulte et al's Warren-Frank Comm. 1, ne sw se 23-6s-5e, L. O'Hara 3174-78 ft, 5 bbls, 3194 ft.

Texas Co.'s Johnson 2, se sw nw 18-6s-6e, Aux V 3183-89 ft and 3191-3205 ft, 411 bbls, 3207 ft.

Jefferson County: Texas Co.'s Rosenberger 2, nw ne nw 35-2s-1e, Benoist 1997-2005 ft, 47 bbls, 2005 ft.

Modert et al's Wallace 2, ne se se 28-3s-3e, Aux V 2714-28 ft, 2 bbls, 2794 ft.

Lawrence County: Smith & Nye's Spidel 3-C, nw sw nw 26-2n-12w, abnd 1428 ft.

W. E. Bailer's Rentscher 2, ne ne ne 27-2n-12w, abnd 1405 ft.

Perrine & Laswell's James Bye 1, ne ne ne 33-2n-12w, abnd 1547 ft.

Marion County: Texas Co.'s Shanafelt 11, ne nw ne 16-2n-2e, Ben 1855-88 ft, 100 bbls, 1888 ft.

Wabash County: Indillky Oil Co.'s Courter 1, nw ne ne 26-1n-12w, Biehl 1437-50 ft, 75 bbls, 1450 ft.

George & Wrather's Dunkle 1, near c w½ w½ 4-1s-12w, Cyp 1990-2004 ft, 3 bbls, 2347 ft.

Wayne County: Carl Robinson's Robertson 1, se nw ne 2-1n-7e, abnd 3045 ft.

Pure's Fitch 1, ne nw 14-1n-8e, McCl lm 3075-85 ft, 44 bbls, 3085 ft.

Rockhill-Pure's Riggs 1, ne ne 22-1n-8e, L. O'Hara 3-20-30 ft, 6 bbls, 3145 ft.

Canterberry et al's Weaver 1, se se se 11-1s-9e, abnd 3450 ft.

White County: W. C. McBride's Hon 1, sw sw ne 6-4s-14w, Biehl 1524-60 ft, 40 bbls, 1560 ft.

Eason Oil Co.'s Clark 1, se nw nw 30-4s-11e, Penn 1334-48 ft, 231 bbls, 1348 ft.

Superior's Greathouse 14, ne se ne 4-5s-14w, Cyp 2578-98 ft, Ben 2687-2726 ft, 142 bbls, 2850 ft.

ILLINOIS WILDCATS

Clinton County—Failure: Wiser Oil Co.'s Weseel 1, ne nw sw 21-1n-2w, abnd 2815 ft.

Marion County—Failure: E. J. Burgenthal et als Sloan 1, ne nw sw 12-3n-1e, abnd 1812 ft.

Monroe County—Failure: Vawter & Braun's Dill 1, se ne nw 13-3s-10w, abnd 965 ft.

Saline County—Failure: Herndon Drlg. Co.'s Busler 1, nw ne nw 28-7s-6e, abnd 3315 ft.

Wayne County—Discovery: Wisconsin O&G Co.'s Powless 1, ne sw 13-1n-5e, Aux V 2971-84 ft, 36 bbls, 3232 ft.

INDIANA

Gibson County: Continental's Maier 6, ne nw nw 13-3s-14w, Cyp 2493-2506 ft, 38 bbls, 2506 ft.

Jay County: Smith & Rhodes' Gagle 1, c se se 24-22n-14e, Trenton 1072-1133 ft, 1 bbl, 1133 ft.

INDIANA WILDCATS

Posey County—Failure: W. F. Lacey et al's Fickas 1, s½ sw nw 11-7s-10w, abnd 2380 ft.

Kingwood's Templeton Heirs 1, nw nw se 19-8s-13w, abnd 2750 ft.

Vanderburg County — Failure: Greive, Schmidt & Vogelor's Koehler 1, se nw ne 16-6s-10w, abnd 1000 ft.

KANSAS

Barton County—Kraft-Prusa: Winkler-Koch's Burmeister 1, c se ne 2-17s-14w, Arb 3410 ft, abnd 3422 ft.

Magnolia's Grosshardt 4, c ne sw 9-17s-11w, Arb 3290 ft, 3000 gals acid, pump 24 bbls, 3299 ft.

Cowley County—Davidson area: Wolf Creek et al's Cloud 1, c n½ ne nw 12-31s-4e, Miss 2957 ft, abnd 3048 ft.

Cowley County—Old gas area: I. W. Mur-

Wells Completed in the United States in Week Ended July 24, 1943

Data preliminary and subject to revision. Revised and more complete data on all completions shown in monthly summary of drilling, published in second issue of each month. More detailed data on wildcats published in third issue of each month.

State or District	FIELD COMPLETIONS: New Wells *Oil	Gas	†Input	Dry	Total	Old Wells Deepened	WILDCAT COMPLETIONS *Oil	Gas	Dry	Total	ALL COMPLETIONS: This Week	Last Week	Cumulative: This Year	Last Year
Alabama													1	3
Arkansas	3				3				4	4	7	6	133	120
California	23			3	26						26	15	836	446
Colorado		1			1			1		1	2		12	7
Georgia													1	2
Illinois	15			7	22		1		4	5	27	41	990	1,154
Indiana	2				2				3	3	5	2	134	223
Kansas	20			5	25				10	10	35	40	928	912
Kentucky	4		1	3	8		1		5	6	14	2	177	82
Louisiana	4	1		5	10			1		1	11	22	356	587
North Louisiana	1	1		1	3						3	12	159	
South Louisiana	3			4	7			1		1	8	10	197	
Michigan	6			3	9				3	3	12	19	297	392
Mississippi									3	3	3	3	27	69
Missouri													10	17
Montana	15	3		1	19				4	4	23		129	102
Nebraska														26
New Mexico	4				4						4	3	140	230
New York	14		10	2	26						26	25	666	679
Ohio	1	12		9	22	1					23	27	507	627
Oklahoma	6	1	1	5	13		1		5	6	19	20	718	858
Pennsylvania	33	3	17	2	55						55	54	1,513	2,339
Tennessee													5	7
Texas	42	3	7	15	67	4	3		28	31	102	84	2,230	3,489
E. T. Bor. Co.'s													11	
East Texas Field													4	
Rest of E. Texas									1	1	1	6	129	
North Texas	13		7	4	24	2	3		12	15	41	21	532	
W. Central Texas				3	3	2			3	3	8	10	197	
West Texas	11			1	12						12	19	492	
Texas Panhandle	5				5						5	1	113	
G. Coast, Upper	5			1	6				4	4	10	6	174	
G. Coast, Lower	2	3		3	8				5	5	13	17	334	
Southwest Texas	6			3	9				3	3	12	3	208	
S. Central Texas												1	36	
West Virginia	1	10		4	15	1					16	11	341	418
Wyoming	5				5				1	1	6		65	46
Total U. S.	198	34	36	64	332	6	6	2	70	78	416	374	10,216	12,835

* Includes distillate wells. † Includes salt water disposal wells.

fin's Cavit 1, nw sw se 9-32s-5e, Arb 3626 ft, abnd 3638 ft.

Graham County—Morel: Appleman & Roberts' Benson 2 c se sw 15-9s-21w, Arb 3763 ft, pot pump 3000 bbls, 3774 ft.

McPherson County—S. Roxbury: Westgate-Greeland's Bishop 1, c s½ se ne 30-17s-1w, Miss 2674 ft, 1000 gals acid, pump 64 bbls, 2688 ft.

McPherson County—Lindsborg: Winkler & Koch's Bean 2, c ne nw 25-17s-4w, Viola 3395 ft, 5000 gals acid, 3000 bbls, 3405 ft.

McPherson County—Bitikofer: E. B. Shawver's Both 2, nw nw se 1-20s-1w, Miss 2893 ft, pump 3 bbls, 2918 ft.

Pratt County—N. Iuka-Carmi: Shell's Sittner 1, sw se se 30-26s-12w, Arb 4286 ft, 2000 gals acid, flow 43 bbls, 1 hr, 4316 ft.

Pratt County — N. Iuka: Mid-Continent's Knop 3, sw sw ne 25-26s-13w, Arb 4313 ft, 200 gals acid, pump 235 bbls, 4334½ ft.

Magnolia's Binger 4, sw nw ne 31-26s-12w, Arb 4280 ft, 4306 ft, 2000 gals acid, flow 15 bbls, 16 hrs, 4306 ft.

Pratt County—Iuka: Skelly's Helmke B-1, sw sw ne 7-27s-12w, sandy dolomite 4211 ft, shot 30 qts, pump 178 bbls, 4240 ft.

Reno County—Zenith: Stanolind's Johnson 1, c sw se 31-23s-10w, Viola 3683 ft, 3000 gals acid flow 985 bbls, 3719 ft.

Rice County—Wenke: Stromfeldt & Hyde's Burden 1, c n½ se ne 9-20s-10w, Lans 3095 ft, abnd 3320 ft.

Vickers' Rose B-3, c n½ sw ne 19-20s-10w, White Lans 2997 ft, 6000 gals acid, pump 148 bbls, 3342 ft.

Rice County—Raymond: Vickers' Rose C-1, c nw se 19-20s-10w, Arb 3294½ ft, pump 77 bbls, 3298 ft.

Rooks County—Laton: Vickers' Gamble 2, c nw nw 3-9s-16w, Lans 3098 ft, 4000 gals acid, swab 3 bbls hr, 3168 ft.

Russell County—Krug: Magnolia's Krug 1, ne se se 8-14s-14w, Lans 3035 ft, 8000 gals acid, pump 100 bbls, 3068 ft.

Russell County — Vaughn: Cities Service's Krug E-1, sw sw nw 17-14s-14w, Regan 3305 ft, pump 163 bbls, 3311 ft.

Russell County—Neidenthal area: National Refining Co.'s Reinhardt 1, se nw sw 19-14s-14w, Lans 2994 ft, 10,000 gals acid, pump 935 bbls, 3021 ft.

Russell County—Trapp: Coralena Oil Co.'s Sellens 3, sw nw nw 19-15s-13w, Arb 3297 ft, pump 392 bbls, 3315 ft.

Alpine & Armer's Redetske 1, ne ne se 21-15s-13w, Arb 3364 ft, abnd 3381 ft.

Stafford County—Drach: Phillips' Hitz 2, c sw nw 7-22s-12w, Arb 3661 ft 300 gals acid, swab 307 bbls 5 hrs, 3669 ft.

Stafford County—Zenith: Tatlock's Krey 2, c e½ nw ne 1-24s-11w, Viola 3704 ft, 4000 gals acid, flow 301 bbls, 3711 ft.

Transwestern's McNickle 3, c se nw 1-24s-11w, Viola 3723 ft, 1000 gals acid, pump 343 bbls, 3747 ft.

KANSAS WILDCATS

Brown County — Failure: Gall & Towle's Allerton 1, c sw ne 26-1s-16e, Hunton 2685 ft, abnd 2785 ft.

Graham County—Failures: Hollow Drilling Co.'s Alexander-Sayers 1, sw se sw 16-8s-21w, Arb 3678 ft, abnd 3708 ft.

W. S. Broderick's Sharp 1, nwc 15-9s-23w, Lans 3643 ft, Viola 4170 ft, abnd 4188 ft.

Kearny County—Failure: Atlantic and Shallow Water's Thornborugh 1, nw se nw 16-21s-35w, Miss 4835 ft, abnd 4927 ft.

McPherson County — Failures: J. J. and Davis-Childs Motor's Douglas 1, c n½ nw nw 20-17s-5w, Arb 3760 ft, abnd 3787 ft.

Heimerich & Payne's Palmquist 1, c e½ ne nw 6-19s-5w, B Miss 3547 ft, abnd 3553 ft.

Rush County—Failure: Falcon Seaboard et al's Baker 1, c s½ se nw 35-17s-18w, Arb 3874 ft, abnd 3919 ft.

Russell County—Failures: Gough Davis et al's Claussen 1, sec 27-12s-14w, Arb 3111 ft, abnd 3117 ft.

Jones & Shelbourne's Dumler 1, sec nw 23-13s-14w, Arb 3340 ft, abnd 3353 ft.

Nadel & Gussman's Weber 1, c ne se 35-15s-12w, Arb 3369 ft, abnd 3400 ft.

KENTUCKY

Daviess County: I. A. Palhamus' Gilmore 1(5), 10-O-32, Jett 525-51 ft, 5 bbls, 551 ft.

Hancock County: J. C. Ellis' Richards 23, 12-O-34, repressure well, 355 ft.

Henderson County: Gulf's Moorehead 2, 23-Q-21, Cyp 2294-2316 ft, 320 bbls, 2316 ft.

Gulf's Williams 10, 23-Q-21, Cyp sd 2310-18 ft, 300 bbls, 2318 ft.

Walter Chenault et al's Chase 1, 11-Q-26, McCl 1970-76 ft, 15 bbls, 1982 ft.

Union County: Pure's Hill 2, 10-O-19, abnd 2685 ft.

Kingwood's Proctor 1, 9-O-20, abnd 2687 ft.

Webster County: Illey Browning's Sellens 1, 21-N-24, abnd 1557 ft.

Daviess County—Failure: Andrew Teller's Alzey 1, 15-N-28, abnd 2037 ft.

Henderson County—Discovery: Carter's Russelburg 1, 24-P-21, Waltersburg 1700-13 ft, 182 bbls, 1713 ft.

Henderson County — Failure: Cherry & Kidd's Cooper 1, 1-P-21, abnd 2740 ft.

W. F. Lacey's Cooper 1, 16-Q-22, abnd 2633 ft.

Trans-Tex Prod. Co.'s Rash 1, 18-Q-22, abnd 2750 ft.

Union County—Failure: Cherry & Kidd's Proctor 1, 9-P-20, abnd 2720 ft.

NORTH LOUISIANA

Caddo Parish—Hosston: Bayou State Oil Corp.'s Jolley B-13, ne ne se 21-22n-15w, pump 12 bbls, 1033 ft.

A. Paul Gilbert's Thigpen-Herold 2, 35-22n-15w, abnd 2520 ft.

Red River Parish — DeSoto-Red River: Peterson Petroleum Co.'s Wilkinson 1, se ne 11-12n-10w, 7-in 1704 ft, perf 1055-60 ft, flow 360,000 gas, 5197 ft, pb 1730 ft.

SOUTH LOUISIANA

Beauregard Parish—Bear: Phillips' First National 2, c se sw 22-6s-9w, 5½-in 8580 ft, perf 6517-19 ft, flow 71 bbls 12 hrs, ⅛-in, td 6580 ft.

Cameron Parish—Cameron Meadow: Magnolia's Cameron Meadow 40, 1650 ft s, 330 ft e of nws 22-14s-13w, abnd 7920 ft.

Cameron Parish—Chalkley: Grubb & Hawkins' Sweetlake 1, ne sw 6-12s-6w, abnd 8411 ft.

Jeff Davis Parish—West Mermentau: Continental's Johnson & Boudreaux 1, 39-10s-3w, abnd 10,885 ft.

Plaquemines Parish — West Bay: Gulf's Buras Levee 6, 1564 ft s, 2260 ft w nec 35-22s-30e, 5½-in 9554 ft, perf 9170-80 ft, flow 288 bbls ⅛-in, td 9555 ft.

St. Landry Parish—Port Berre: Bering Oil Co.'s Nezat 1, s 84 deg 55 mins w 4104 ft fr nec sec 4-6s-5e, abnd 7590 ft.

Vermilion Parish—Whitelake: Union Oil's Vermilion Parish School Board 6, start ne cor sec 16, go s 00 deg 34 mins w for 4620 ft, then 3179 ft w at ra in sec 16-15s-1e, 5½-in 6448 ft, dual completion, perf 5972-6004 ft, flow 173 bbls 9/64-in, perf 6433-40 ft, flow 254 bbls 9/64-in, td 6448 ft.

SOUTH LOUISIANA EXTENSION

Jeff Davis—Welsh: Stanolind's Trimble 1, ne se sw 16-9s-5w, 5½-in 9070 ft, perf 8939-48 ft, 19,000,000 gas, open, shut in, td 9150 ft. Extends prodn north flank.

MICHIGAN

Bay County—Kawkawlin: Chapman Oil Co.'s Wieland 1, n½ sw sw 35-15n-4e, flow 37 bbls, 2923 ft.

Clare County—West Winterfield: Daily Crude Oil Co.'s Schuett 2, w½ nw sw 28-20n-6w, flow 409 bbls, 3790 ft.

Gladwin County—Bentley: Mammoth Producing Corp.'s Davis 1, se ne se 17-17n-2e, flow 240 bbls, 3560 ft.

Mecosta County—Fork: Gulf's Hamill 3, c nw ne 8-16n-7w, flow 409 bbls, 19 hrs, 3804 ft.

Missaukee County—Riverside: Taggart Bros.' Ardis 62, c se 22-21n-7w, dry 1446 ft.

Osceola County—Reed City: James E. Flanigan's Curtis 1, n½ sw ne 28-18n-10w, dry 3670 ft.

Osceola County—Evart: Sun's Line 1, n½ nw se 28-18n-8w, flow 226 bbls 10 hrs, 3738 ft.

Van Buren County — Geneva: Socony-Vacuum's Varnum 3, ne se sw 24-1s-16w, dry 1070 ft.

Michalhoma Oil Co.'s Abfall 1, ne nw nw 25-1s-16w, swab 55 bbls, 1079 ft.

MICHIGAN WILDCATS

Kent County—Failure: Smith Pet. Co.'s Brown 1, se ne sw 27-5n-11w, Traverse 1895 ft, abnd 2012 ft.

Missaukee County—Failure: Sun's State A1, s½ sw nw 11-23n-5w, elev 1178 ft, Traverse 2480 ft, Dundee 3184 ft, abnd 4596 ft.

Montcalm County—Failure: Associated Petroleum Co.'s Smid 1, c se se 13-12n-10w, abnd 3562 ft.

MISSISSIPPI WILDCATS

Hinds County: W. L. Gholson's Hall 1, nw sw 36-8n-3w, abnd 6872 ft.

Plains Production Co.'s J. S. Taylor 1, nw sw 14-5n-2w, abnd 7560 ft.

Jefferson County: Gulf's Bradshaw 1, ne ne 20-3n-17w, abnd 1520 ft.

MONTANA

Fallon County—Cedar Creek: Montana-Dakota Utilities Co.'s Gov't 185, cne ne 22-8n-59e, 1.78 gas, 98 lbs, Judith River 785-895 ft, td 895 ft.

Glazier County—Cut Bank: Glacier Production Co.'s McGuinnes-Unit 2, se sw sw 5-35n-5w, flow 840 bbls, Sunburst 2833-65 ft, 7-in 2833 ft, td 2869 ft.

Glacier Production Co.'s Thayer 3, cse ne

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28-33n-5w, swab 50 bbls, Lower Cut Bank 2950-64 ft, 7-in 2901 ft, td 2964 ft.

Wm. Hanlon's Tribal-226 1, se ne sw 25-32n-6w, swab 200 bbls, Lower Cut Bank 3109-13 ft, 7-in 3072 ft, td 3137 ft.

Santa Rita's Jordan 7, csw ne 18-32n-5w, swab 280 bbls, Lower Cut Bank 2810-25 ft, 7-in 2784 ft, td 2825 ft.

Santa Rita's State 2, csw se 12-33n-6w, pump 20 bbls, Upper Cut Bank 3025-86 ft, 7-in 3026 ft, td 3094 ft.

Santa Rita's Tribal 18, cnw sw 10-35n-6w, swab 900 bbls, Sunburst 2850-78 ft, 7-in 2854 ft, td 2880 ft.

Texas' Fee 2, se ne ne 31-32n-5w, swab 250 bbls, Lower Cut Bank 2956-83 ft, 7-in 2937 ft, td 2987 ft.

Texas' Gov't 6, sw ne se 18-32n-5w, swab 63 bbls, Lower Cut Bank 2715-26 ft, 7-in 2680 ft, td 2729 ft.

Trigood Oil Co.'s Tribal-229 3, se se se 25-32n-6w, swab 240 bbls, Lower Cut Bank 2980-3050 ft, 7-in 3046 ft, td 3101 ft.

Phillips County—Bowdoin: Montana-Dakota's Gov't 607, csw sw 21-33n-32e, .139 gas, 320 lbs rp, Bowdoin 862-90 ft, Phillips 1050-65 ft, td 1080 ft.

Montana-Dakota's Smith 604, cse se 23-33n-32e, .084 gas, 418 lbs rp, Bowdoin 1050-70 ft, Phillips 1125-40 ft, td 1196 ft.

Toole County — Kevin-Sunburst: B. A. S. Aronow's Gov't 6, se sw nw 21-35n-3w, pump 42 bbls, Ellis-Madison contact 1800 ft, acidized 500 gals, td 1813 ft.

Kalbar Oil Co.'s Fee 3, ne ne ne 13-35n-2w, abnd 1625 ft.

McKnight & Stock's State 5, nw nw ne 16-35n-2w, pump 70 bbls, Ellis-Madison 1610-39 ft, acidized 500 gals, td 1639 ft.

Casper T. Oien's Engemoen 14-A, nw se nw 14-35n-2w, pump 11 bbls, Ellis-Madison 1537-42 ft, acidized 500 gals and 6000 gals, td 1552 ft.

Rimrock Oil Co.'s Schmidt 10, se ne nw 29-35n-3w, pump 10 bbls, Ellis-Madison 1785-96 ft, td 1796 ft.

Texas' Reeg 9, ne sw sw 14-35n-2w, pump 85 bbls, Ellis-Madison 1501-1507 ft, td 1507 ft.

Texas' Swayze, sw se ne 34-36n-2w, pump 135 bbls, Ellis-Madison 1801-08 ft, td 2010 ft.

MONTANA WILDCATS

Toole County—Aloe Nose—Failures: Northern Ordnance's Barkulo 1, cnw nw 26-34n-3w, Madison 1715 ft, abnd 1715 ft.

Northern Ordnance's Moser 1, csw nw 14-33n-3w, Sunburst 1435-60 ft, Madison 1717 ft, abnd 1824 ft.

Toole County—Red Creek—Failure: Northern Ordnance's State 1, cne ne 10-36n-4w, Madison 2779 ft, abnd 2880 ft.

Toole County — Sweetgrass Hills — Failure: Northern Ordnance's Hoetze, cel ne ne 23-37n-2w, Madison 2331 ft, abnd 2275 ft.

NEW MEXICO

Eddy County: McDannald & Williams' Grier 4, 1684 ft ewl and 660 ft nsl 31-16s-31e, pump 49 bbls, shot 340 qts 3044-3190 ft; 260 qts 3185-3305 ft and 320 qts 3451-3576 ft.

Robt. E. McKee et al's State 1, c nw nw 32-17s-30e, flow 150 bbls, 2-in, shot 250 qts 2570-2612 ft and 140 qts 2816-51 ft, td 2962 ft, pb 2860 ft.

Lea County—Eunice: T. P. Coal & Oil Co.'s State 29-A, c nw nw 9-22s-36e, salt 1530-2978 ft, flow 190 bbls, 22/64-in, acid 4000 gals 2820-60 ft.

Lea County—Vacuum: N. G. Penrose's State-Southern 1, c s½ sw sw 24-17s-35e, pump 9 bbls, acid 4000 gals 4545-91 ft, td 4599 ft.

OKLAHOMA

Caddo County—Cement: Palmer Oil Co.'s Sterba 4, se se sw 35-6n-10w, Medrano 5803 ft, flow 85 bbls per hr, 5995 ft.

Creek County—E. Stroud: Fleet-Hubble's Kaye 2, c nw sw 8-14n-7e, Prue 2842 ft, shot 140 qts, flow 240 bbls.

Creek County — N. Bristow: Barnsdall's Mitchell 1, nw sw se 22-17n-8e, sand 2333 ft, pump 23 bbls in 4 hrs and pump off from 1616-28 ft, td 2333 ft.

Creek County—Glenn: Gulf's Pitman 43, sw se se 7-17n-12e, Glenn sand 1397 ft, input well, 1557 ft.

Hughes County—Un-named: W. A. Delaney's Scott 2, nw se nw 23-6n-8e, Booch 2640 ft, abnd 2707 ft.

Kay County—Un-named: Ingling & Parker's Caughlin 1, c sw sw 29-25n-1e, Layton 3218 ft, abnd 3247 ft.

Okfuskee County—Deaner area: Wood et al's Turner 1, se se nw 9-11n-11e, Wx 3688 ft, abnd 3698 ft.

Okmulgee County—Mounds: Klingensmith's Weldy 1-A, c s½ se ne 30-16n-12e, Dutcher 2152-70 ft, 10,900,000 gas, 2170 ft.

Osage County—Osage City: Burch Clyroy's Osage 13, c s½ s½ 36-22n-8e, sand 510-22 ft, shot 60 qts, swab 30 bbls, 524 ft.

Pawnee County — Skidee: A. G. Talbot's Longsire 1, nw nw se 35-22n-6e, Prue 2727 ft, shot 20 qts, pump 33 bbls, 2997 ft.

Seminole County—NE Wewoka: Jordan Petroleum Co.'s Orr 2, nw ne sw 16-8n-8e, Gilcrease 3104 ft, flow 956 bbls, 3123 ft.

Stephens County—Velma: Skelly's McClanahan 7, c sw ne sw 35-1s-5w, abnd 930 ft.

Skelly's Robberson 5, c nw ne 35-1s-5w, Viola 8640 ft, abnd 8690 ft.

OKLAHOMA WILDCATS

Caddo County—Failure: Texas Co.'s Mahset-ky 1, nw ne nw 33-5n-11w, Arb 4655 ft, abnd 4755 ft.

Logan County—Failure: Big Chief's Jones 1, c ne ne 4-16n-1e, Wx 5130 ft, abnd 5270 ft.

Okfuskee County—Failure: McIntyre's Martin 1, c nw se 12-12n-8e, Wx 4169 ft, abnd 4191 ft.

Amerada's Kennedy 1, se ne nw 27-12n-10e, Wx 3770 ft, abnd 3891 ft.

Okfuskee County—Discovery: Midco's Community 1, ne nw ne 24-12n-8e, Cromwell pay 3496-3504 ft, flow 2445 bbls, 3504 ft.

Pottawatomie County—Failure: Smith Bros.' Coone 1, c nw sw se 32-10n-3e, Wx 5532 ft, abnd 5535 ft.

EAST TEXAS WILDCATS

Van Zandt County—Failure: Hunt Oil Co.'s Parker-Pure 1, 330 ft from se and 887 ft from sw lines 33.8-ac tr and J. Sparks sur, elev 427 ft, Pecan 2173 ft, Austin 3270 ft, Woodbine 4193 ft, Georgetown 4987 ft, Goodland 6068-6126 ft, Paluxy 6134 ft, 1st Glen Rose 6428 ft, abnd 6433 ft.

NORTH TEXAS

Archer County—Scotland: R. H. Hawn et al's Edwards-Texaco 3, 1923 ft snl and 330 ft ewl blk 33, L. P. Hunt sur, flow 384 bbls, ½-in, acid 3000 gals Bend 5215-35 ft.

Archer County: Miller & Ward's Herron 5, 1530 ft snl, 600 ft ewl of lot 12, blk 5, Clark-Plumb sur, pump 10 bbls, 842-44 ft.

W. H. Peckham et al's Abercrombie 1, 2650 ft nsl and 1750 ft ewl S. Abercrombie sur, A 752, abnd 1333 ft.

W. C. Young et al's Richardson 1, 237 ft out nec Wm. McCune sur, A 943, pump 15 bbls, sand 1187-95 ft.

Baylor County — Seymour: British-American's Turbeville 14, 1667 ft nsl and 1002 ft wel T&NO 114, lime 2421 ft, flow 240 bbls, 2-in, acid 2000 gals 2424-25 ft.

Clay County—Joy: Shell's Brock 3, 660 ft out nwc sec 31, H. Williams sur, Bend 5446 ft, Miss 5935 ft, Ellen 6076 ft, flow 1552 bbls, 2-in, acid 5000 gals 5939-6079 ft.

Clay County: W. H. Metzner et al's Taylor-Metzner 24, 150 ft se of se line of Firsetone

AMERICAN HEAVY DUTY ROLLER BEARINGS have built into them the vital extra capacity for continuous 24-hour-a-day performance under the most gruelling service conditions possible. Brutally strong . . . simply constructed . . . precise . . . AMERICANS operate quietly, smoothly, in the heaviest equipment under the most terrific strains and impacts. Longer, safer, lower-cost, trouble-free service is assured when AMERICAN HEAVY DUTY ROLLER BEARINGS are on the job. That's why most major manufacturers and designers of heavy industrial machinery and oil country equipment specify AMERICANS.

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tract and 450 ft from ne line BBB&C 23, abnd 1172 ft.

W. H. Spradling-McNatt & Clark's Taylor-Elliott 4, 2105 ft nsl and 270 ft wel blk 55, Bacon subdiv, pump 45 bbls, 1124-32 ft.

F. H. Gohlke et al's Bunnenberg 6, 1068 ft from sw and 1245 ft from nw lines blk 34, Pratt's Pasture subdiv, abnd 1232 ft.

Cooke County—Walnut Bend: Sinclair Prairie's Atkins 14, 330 ft snl and 1334 ft wel of 198.2-ac lse, C. Furinash sur, Winger 5519 ft, Simpson 5576 ft, flow 778 bbls, 2-in, perf 5519-70 ft, td 5591 ft.

Texas' Robinson 1, 504 ft out swc lot 1, J. M. Kent-University leag, Winger 5532 ft, flow 1380 bbls, 2-in, perf 5532-42 and 5562-83 ft, td 5624 ft.

Jack County—Ellis: Hanlon & Buchanan's Jones 2-A, 495 ft out sec 101½-ac lse, lot 6, J. W. Williams sur, Bend 4773 ft, flow 374 bbls, 12/64-in, perf 4782-87 ft, td 4952 ft.

Jack County: Chas. Kadane et al's Carter-Shell 9, 1550 ft ewl and 925 ft nsl TE&L 3312, pump 10 bbls, sand 265-271 ft.

Wilbarger County: C. B. Christie et al's McCrary 3, 2300 ft nsl and 1650 ft wel H&TC 64, blk 14, pump 51 bbls, sand 1490-96 ft.

Throckmorton County: T. R. Putnam et al's fee 7, 600 ft nsl sec 10, C. I. R. sur and 400 ft w of No. 5, abnd 666 ft.

Young County — Allar-Caddo: Panhandle Ref. Co.'s Allar-Hunt 2-C, 3022 ft snl and 495 ft wel of s-1185-ac of TE&L 3409, Bend 3576 ft, flow, 83 bbls, 7/64-in, acid 1000 gals 3576-85 ft.

Young County: Belfort Oil Co.'s Primitive Baptist Church 2, 540 ft nsl and 330 ft fr sw J. C. Brown sur, A 39, flow 53 bbls, ¼-in, shot 30 qts 3819-39 ft.

Martin & Harvey's Daniel 7, TE&L 164, pump 3 bbls, 871-86 ft

NORTH TEXAS WELLS DEEPENED

Archer County—Vogtsberger: Fain-McGaha's Thorman 1, 467 ft out nec lot 78, H&TC 11, otd 4690 ft, flow 912 bbls, 2-in, shot 380 qts 4648-4750 ft.

Young County: Dean Bros.-Murray & Griffey's King 2, 660 ft ewl and 1535 ft nsl of C. N. Bussell sur, A 1889, otd 3795 ft, abnd 4309 ft.

NORTH TEXAS GAS INPUT WELL

Archer County: Sinclair Prairie's Campbell Banking Co. 10-A, 5 ft snl and 660 ft wel blk 13, G. P. Diggs subdiv of South Anderson Ranch sur, takes 3020 ft gas daily, well-head press 25 lbs, sand 1334-46 ft.

NORTH TEXAS WATER FLOODING WELLS

Wichita County: Cable Oil Co.'s Willis 25-w, 800 ft ewl and 2200 ft nsl of BBB&C, A 29, sand 236-43 ft.

Cable Oil Co.'s Willis 27-w, BBB&C, A 29, sand 238-46 ft.

Cable Oil Co.'s Willis 33-w, BBB&C, td 320 ft.

Cable Oil Co.'s Willis 35-w, BBB&C, sand 278-96 ft.

Cable Oil Co.'s Willis 36-w, BBB&C, td 301 ft.

Cable Oil Co.'s Willis 37-w, BBB&C, sand 278-82 ft.

NORTH TEXAS WILDCATS

Archer County—Failures: Gulf's Parish 1, c se nw ATNCL 97, Bend 4875 ft, Mississippi 5259 ft, Ellenburger 5278 ft, abnd 5310 ft.

Akin-Dimock-Simpson and Fell Oil Co.'s Abercrombie 1-B, 330 ft snl and 990 ft wel blk 25, Harris subdiv, abnd 1564 ft.

Akin-Dimock-Simpson and Fell Oil Co.'s Abercrombie 1-C, 1320 ft nsl and 1980 ft wel blk 23, Harris subdiv, abnd 1486 ft.

Shappell Oil Co.'s Seay 1, 1493 ft snl and 1542 ft ewl sec 107, J. W. Harris subdiv, abnd 1400 ft.

C. Y. Gorman et al's Abercrombie 1, 550 ft nsl and 2250 ft ewl blk 109, Harris subdiv, abnd 1193 ft.

W. C. Young et al's Hayter 1, 330 ft out nwc s½ TE&L 2436, abnd 1420 ft.

Baylor County—Failure: Continental-British-American's Hunt 1, 330 ft out nwc lot 28, J. Garner sur 194, Bend 5316 ft, Mississippi 5635 ft, Ellenburger 6010 ft, abnd 6170 ft.

Cooke County—Oil Discovery: Fred Snuggs-McElreath and Seitz's McGeorge 1, 1319 ft ewl and 1386 ft nsl sec 64, Fannin CSL, Winger 5505 ft, Simpson 5730 ft, pump 236 bbls 35-gr, Strawn perf 4285-94 ft, td 6010 ft.

Cooke County—Failures: D. L. Monroe et al's McIntosh 1, 330 ft from m/s/n and 330 ft from m/w/w lines SP 5, A 987, abnd 1606 ft.

Geo. L. Pace Pet. Co.'s Cannon 1, 330 ft out m/n/sw corner J. F. Johns sur, A 1569, abnd 2202 ft.

Montague County—Failure: W. B. Omohundro et al's Fowler 1, 5877 ft nsl and 3141 ft ewl of R. M. Davis sur, A 181, Strawn 3901 ft, Bend 6044 ft, abnd 6314 ft.

Throckmorton County—Failure: White-Duncan and Humble's White-Duncan 2, 990 ft out sec blk 50, Comanche Indian Reserve, abnd 947 ft.

Young County—Murray Pool—New Oil Pay: Standard of Texas-Hanlon & Buchanan's Donnell 4, lse 4, 991 ft snl and 1400 ft wel TE&L 2371, Bend 3725 ft, Barnett 4520 ft, flow 317 bbls 39.6-gr, gas-oil ratio 1045/1, ¼-in, acid 4000 gals, Bend perf 3745-50 ft, td 4610 ft.

Young County—Allar Pool—New Oil Pay: Panhandle Ref. Co. et al's Allar-Hunt 1-P, 3305 ft snl and 1295 ft ewl of e-520 of n-961 of s-1185-ac tr, TE&L 3409, elev 1203 ft, Palo Pinto 1686 ft, pump 49 bbls oil, 12 water, lime 1686-97 ft.

Young County—Failure: J. R. Tolbert Dr. Co.-Continental's Graham 1, 467 ft out swc TE&L 2398, Bend 3715 ft, Miss. 4493 ft, Ellen. 4656 ft, abnd 4702 ft.

WEST TEXAS

Cochran County—Slaughter: Devonian et al's Duggan 29-A, 560 ft out swc lab 6, leag 55, Oldham CSL, flow 878 bbls 2½-in, acid 12,000 gals 5015-56 ft.

Crane County—McKee: Magnolia's Glenn 2, 660 ft from se and 1980 ft from ne lines H&TC 20, blk 1, flow 357 bbls, ½-in, natural, McKee sand 6113-21 ft.

Crockett County—Soma-Noelke: D. Breeding et al's (was Shell) State 1, 719 ft from m/n/s and 1387 ft from m/e/e lines sec 71½, blk GG, John Oney sur, Yates 1206 ft, abnd 2247 ft.

Crockett County—Crockett: F. & J. Co.'s University-Gulf 6, 1650 ft snl and 2004 ft ewl sec 17, blk 14, pump 19 bbls, plus 5% water, shot 100 qts 1621-50 ft, pb 1525-50 ft.

Ector County—Foster: Atlantic et al's Johnson-Sinco 5-D, 1980 ft snl and 510 ft ewl T&P 43, blk 42, T-1-S, pump 375 bbls, shot 277 qts 4122-4210 ft.

Hockley County—Slaughter: T. F. Morrow et al's Mallet 25, 580 ft out swc lab 13, leag 48, Edwards CSL, flow 974 bbls, cas, acid 16,000 gals 4942-75 ft.

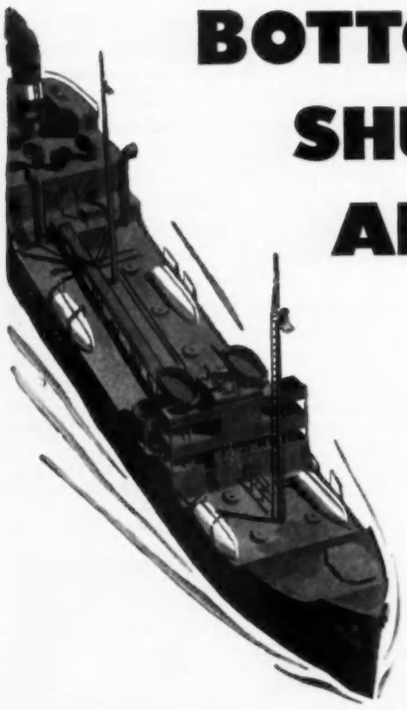
T. F. Morrow et al's Mallet 26, 580 ft out sec lab 13, leag 48, Edwards CSL, flow 1458 bbls, cas, acid 16,000 gals 4940-83 ft.

T. F. Morrow et al's Mallet 30, 580 ft out sec lab 12, leag 48, Edwards CSL, flow 428 bbls, cas, acid 12,000 gals 4940-83 ft.

Mitchell County—Iatan: Magnolia's Foster 14, c ne sw T&P 8, blk 29, T-1-S, pump 147 bbls, acid 2500 gals, shot 520 qts 2580-2850 ft, td 2867 ft.

Pecos County—Walker: Cardinal Oil Co.'s

Oil Wins Wars!



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University 1-F, 1624 ft snl and 330 ft wel sec 14, blk 16, flow 84 bbls, 1-in, shot 40 qts 2048-57 ft.

Winkler County—Emperor Deep: C. V. Lyman et al's Cowden-Tide Water 5, 1650 ft snl and 2310 ft wel PSL 27, blk B-5, flow 565 bbls, 1-in, shot 250 qts 2840-2965 ft.

Yoakum County—Wasson: Carl B. King-Bay Pet. Corp.'s Dowell-Conoco 1, 880 ft out swc sec 896, flow 795 bbls ⅝-in, acid 6000 gals 4965-5039 ft.

WEST CENTRAL TEXAS

Jones County—Wimberly: B. Balken et al's Dunnigan 2, 1552 ft nsl and 330 ft wel blk 89, DeWitt CSL, abnd 600 ft, acct no permit.

Palo Pinto County: Rathke Oil Co.'s Stovall 1, 2000 ft snl and 2366 ft wel John P. Rohns sur, A 381, Barnett shale 4653-4785 ft, lime 4786 ft, abnd 4795 ft.

Shackelford County: J. W. Keys et al's Matthews 3, 1515 ft nsl and 660 ft wel ET 14, abnd 582 ft.

WEST CENTRAL TEXAS WELLS DEEPENED

Eastland County: Lone Star Prod. Co.'s (was Leonard Pet. Co.) Ward 1, 2940 ft snl and 3262 ft wel J. B. Hoxie sur, otd 3194 ft, 2,060,000 gas, 3644-65 ft.

Stephens County: Helmerich & Payne's (was Talbot et al) Kennedy 1, 1250 ft nsl and 990 ft ewl TE&L 1031, elev 1126 ft, otd 3927 ft, Ellenburger 4424 ft, abnd 4671 ft.

WEST CENTRAL TEXAS WILDCATS

Jones County—Failures: Everts Dr. Co.-Louis F. Greene's Commons 1, 330 ft out lot 8, blk 4, A. W. Hill sur, Sedwick 1265 ft, abnd 1945 ft.

Shackelford County—Failure: Roeser-Pendleton-Conoco's Cook 2-A-111, 1031 ft nsl and 1017 ft wel ET 111, abnd 1670 ft.

Taylor County—Failure: F. W. Merrick's Wells 1, 330 ft s and 1880 ft e of sec lot 6, Grimes CSL, leag 124, but in T&P 27, blk 17, elev 1767 ft, abnd 2798 ft.

LOWER TEXAS COAST

Bee County—South Caesar: Atlantic's Slick 1, 554 ft fr wl, 467 ft fr sl 118-ac tr, blk 35, P. B. Butler subdvn Medio Rch, E. Stapp sur, A 293, 7-in, 6610 ft, perf 6544-46 ft, flow 37 bbls, 5/64-in, td 6653 ft.

Calhoun County—Jay Welder: Stanolind's State 21, 2218 ft n, 232 ft e at ra fr ne cor tract 154, Espiritu Santo Bay, abnd 6000 ft.

Jackson County—Collier: Texas Co.'s Bolling-Collier 5, 365 ft fr sel, 3014 ft fr nel 186-ac tr, James Kerr sur, A 39, 5½-in 2468 ft, perf 2440-45 ft, flow 33 bbls, 3/32-in, td 2468 ft.

Jackson County—Ganado: Texas Co.'s Tunison 10, 467 ft fr wl, 330 ft fr sl Morris & Cummings sur 9, A 233, abnd 7610 ft.

Jim Wells County—North Magnolia City: Humble's Adams 1, 1980 ft fr sl, 660 ft fr el 1494-ac tr, Marcelino Lopez gr, A 281, 5½-in, 5198 ft, perf 5124-40 ft, 2,000,000 gas, 3/16-in, td 5964 ft.

Jim Wells County—Thiel: H. R. Smith and H. J. Mosser's Ehlers 1, Thiel outpost, 330 ft fr n&wl's blk 19, George J. Reynolds sur 126, A 394, ½ mi n Thiel field, 5½-in 3480 ft, perf 3436-45 ft, 12,000,000 gas, open flow, td 5027 ft.

Karnes County—Hobson: Seaboard's Huehlefield 1, 500 ft fr n&wl's 90-ac lse, Don Erasmo Seguin gr, abnd 4120 ft.

Kleberg County—Stratton: Chicago Corp.'s Wardner 28, 2790 ft fr sl, 7200 ft fr wl 8862-ac tr, Pancho de Arriba gr, 5½-in 6547 ft, dual completion, perf 6458-92 ft, flow gas-distillate, no gauge, perf 6139-43 ft, flow 141 bbls 1-1/64-in, td 6547 ft.

LOWER TEXAS COAST WILDCATS

Jackson County—Failure: Stanolind's Appelt 1, core test, 530 ft fr nl, 500 ft fr el J. R. Wickham sur, A 271, 5 mi ne Cordele field, abnd 5500 ft.

Jackson County—Failure: G. W. Strake's Bennett 1, 467 ft fr nw&nel's of ne 80-ac of se 160-ac of sw 320-ac of Twin Lakes Pastures, Valentin Garcia gr, abnd 6260 ft.

Jackson County—Failure: G. W. Strake's Sheblak 1, 660 ft fr s&wl's e½ blk 12, Sutherland Pasture subdvn, Thomas Menefee sur, A 52, 5½-in 5688 ft, abnd 7010 ft.

Karnes County—Failure: H. H. Howell's Demmer 1, 246-ac tr, J. Dupong sur, abnd 5495 ft.

San Patricio County—Failure: Coastal Refineries' Caldwell 1, 1980 ft fr el, 660 ft fr nl sec 11, Julian de la Garza gr, abnd 6407 ft.

SOUTHWEST TEXAS

Duval County—Colmena: Colmena Oil Co.'s Sun 4, 1600 ft fr nwl, 2000 ft fr nel sur 52, 7-in, 1522 ft, pump 15 bbls, td 1527 ft.

Duval County—Conoco Driscoll: Continental's Driscoll 17, 3275 ft fr sl, 16,000 ft fr el 12,000-ac lse, SK&K sur 446, 6-in 3307 ft, perf 3297-3303 ft, flow 77 bbls, 3/16-in, td 3955 ft.

Continental's Driscoll 19, 2275 ft fr sl, 16,000 ft fr el 12,000-ac lse, SK&K sur 446, 6-in 3035 ft, perf 2986-93 ft, flow 133 bbls, 12/64-in, td 3920 ft.

Jim Hogg County—Yeager: M. L. Massingill, Auto Ordnance and Texon Royalty's Yeager 2, 1650 ft w, thence 330 ft s fr ne cor H. C. Yeager sur 29, abnd 3871 ft.

Jim Hogg County—Neuhaus: V. F. Neuhaus, E. E. Adams and M. C. Lucky's East 2, 330 ft fr s&wl's blk 288, J. W. Pippin subdvn, El Randado gr, abnd 3554 ft.

Starr County—Boyle: Fidelity Oil & Royalty's Sugarland 2, 1220 ft fr sl, 467 ft fr el of e 100-ac of w 300-ac of 500-ac tr in porc 91-92, 5½-in 4000 ft, perf 3942-58 ft, flow 69 bbls ⅛-in, td 4000 ft.

Starr County—North Rincon: Sun's Coates-State 1-A, 467 ft fr el, 1320 ft fr s'ly sl Francisco Alvarado sur 516, abnd 4437 ft.

Starr County—North Sun: Sun's Laurel 1, 1015 ft fr sl, 467 ft fr el 69-ac tr, La Sal Colorado gr, 5½-in 4574 ft, perf 4533-38 ft, flow 171 bbls, 9/64-in, td 6000 ft.

Webb County—Dulup: Dulup Oil Co.'s Puig 8, 330 ft fr n&wl's blk 61, Albercas de Arriba gr, 200-ac lse, 5½-in 1804 ft, pump 105 bbls, td 1815 ft.

SOUTHWEST TEXAS WILDCATS

Gonzales County—Failure: H. H. Coffield's Harris 1, 660 ft fr n&wl's 80-ac lse out of nw cor 369-ac tr William Page sur 2, 7-in 2830 ft, abnd 5281 ft.

McMullen County—Failure: Gulf's Shiner 1, 660 ft fr n&el sec 55, C. C. Shumway subdvn Shiner Rch, abnd 6557 ft.

Jim Hogg County—Failure: Humble's Mestene 4, Santa Rita area, 660 ft fr sl, 1980 ft fr wl sec 10, Fowler & Rankin subdvn Palitos Blancos gr, 5½-in 4622 ft, abnd 5700 ft.

TEXAS GULF COAST

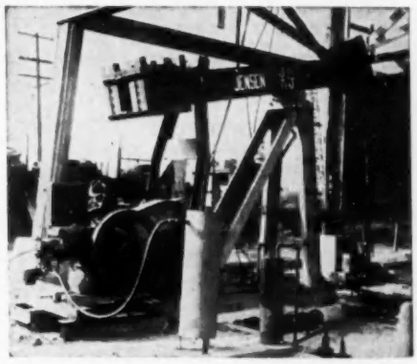
Harris County—Pierce Junction: Texas Gulf Producing's Weary 2, lot 38, 151-ac tr, E. Farias sur, 5½-in 6858 ft, perf 6795-99 ft, flow 105 bbls, ⅛-in, td 6568 ft.

Hamill & Smith's Gulf-Jones 5, 25-ac lse, J. A. Williams sur 1028, 7-in, 3241 ft, sand 3241 ft, flow 116 bbls, 9/64-in, td 3253 ft.

Jefferson County—Lovell Lake: Humble's Broussard 43, 114 ft s alg el fr ne cor, th 3911 ft w at ra, 1653-ac tr, C. Hillebrandt sur 11, sand 7713 ft, 5½-in 7712 ft, flow 173 bbls, ⅛-in, td 7720 ft.

Liberty County—Esperson: General Crude's Davis 30, 2050 ft fr sl, 3500 ft fr el 805-ac lse, David L. Kokernut sur, abnd 9299 ft.

General Crude's Stanolind-Sun Fee 1, 34.8-ac



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Notes for the Equipment Buyer and User

Pipe Coupling

E. B. WIGGINS OIL TOOL COMPANY

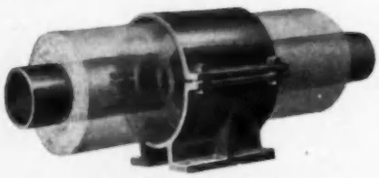
E. B. Wiggins Oil Tool Company, 3424 East Olympic Boulevard, Los Angeles, California, announces a new line of industrial and marine couplings, ranging in size from 2 to 10 inches. These couplings are disengaged by releasing a latch and throwing a lever.

Connection is made by placing the two ends of the coupling together and raising the lever. The couplings are all made in accordance with federal specifications and the larger sizes are individually tested for pressure and porosity.

Pipe-Alignment Guide

AMERICAN DISTRICT STEAM COMPANY

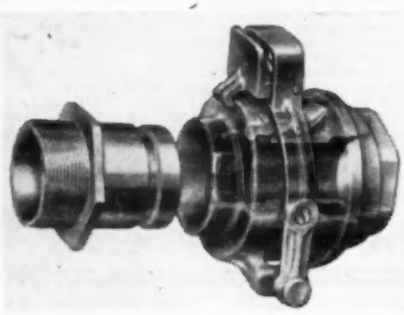
American District Steam Company, North Tonawanda, New York, announces the new pipe-alignment guide, Model G, which has been redesigned to save critical metal and machining operations.



Pipe Alignment Guide

The device is used on steam, hot water, fuel oil or other pipe lines adjacent to expansion joints to insure true alignment of pipes in service. It consists of a semi-steel spider and guiding cylinder allowing for a pipe movement of eight inches.

To install, the lower half of the guiding cylinder is bolted into place, the two-piece spider is bolted to the pipe, the pipe is then insulated and the upper half of the clyinder bolted to the base section. In service, the four "fingers" of the spider ride on the inside of the cylinder which is coated with heavy grease before shipment to provide true pipe alignment.



Wiggins Quick Disconnect Coupling

Tractor Booklet

Caterpillar Tractor Company, Peoria, Illinois, has published a new bulletin, "Caterpillar Producing for Victory." The booklet shows the use of Caterpillar equipment in the fields of mining, logging, oil, and for industrial power and agriculture.

Butterfly Valve

R-S Products Corporation, Wayne Junction, Philadelphia, has issued a four-page illustrated bulletin No. 16-B which contains complete dimension tables for butterfly valves, 15 to 125 psi.

Wilson Supply Company Buys Manufacturing Plant

Wallace D. Wilson, president of Wilson Supply Company, has announced the formation of Wilson Foundry and Machine Company, with Wallace D. Wilson, president; T. W. Wilson, vice-president; and R. W. Jeffrey, secretary-treasurer. The new corporation has purchased the properties, including machine shop and foundry, of Jeddy D. Nixon Company, 1417 Elysian Street, Houston.

Wilson Foundry and Machine Company will manufacture the (patented) Nixon surface control gas-lift system and other oil field specialties which were produced under the former ownership, and sale will be handled by Wilson Supply Company

W. J. Sutton, for the past several years in charge of the petroleum engineering department and director of gas-lift sales for Wilson Supply Company, has been placed in charge of the new company, retaining his position with the Wilson Supply Company.

Jeddy D. Nixon has opened offices in the M. and M. Building, Houston. He and his staff of engineers will continue research and development in the field of gas-lifting for the new company. Wilson Foundry and Machine company plant is one of the largest devoted to the manufacture of gas-lift equipment, and in recent months has been manufacturing many items for the war agencies. The foundry specializes in the casting of brass, bronze, aluminum and special alloys, and is one of the largest for this type of metals in the Southwest.

Bridgeport Machine Company Changes to Oil Business

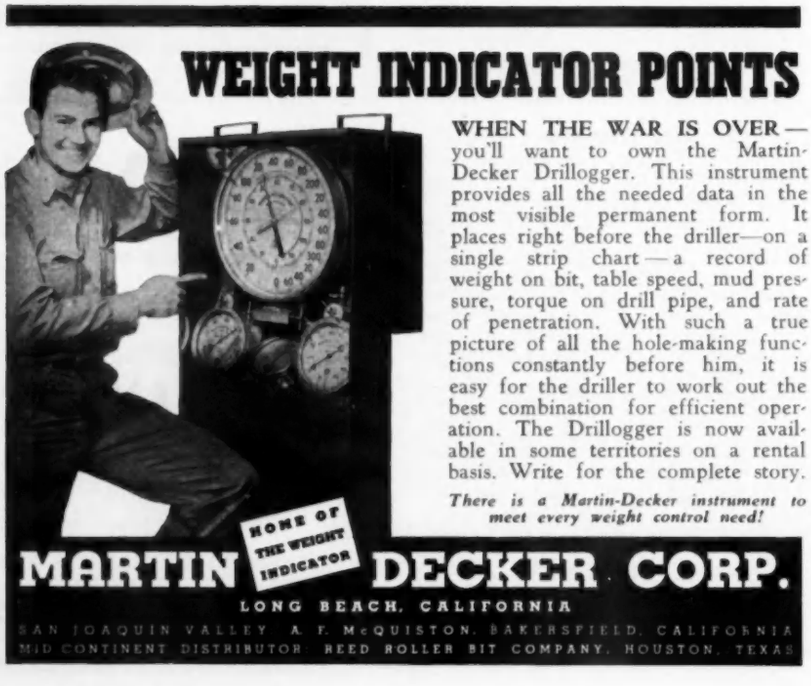
Discontinuing its supply business in favor of oil production, The Bridgeport Machine Company will liquidate all supply branches by August 1. Inventories in this department will be disposed of through jobbers and other supply outlets, except such proportions as may currently be useful in the company's oil development, F. H. Hollow, president, announced.

In view of the measure of success achieved by the organization in oil development, it expects to devote its entire energies to oil production. The corporate name is to be changed to Bridgeport Oil Company.

A preferred dividend of $28.00 per share has been authorized to pay all accrued dividends on the preferred stock of the company to July 1, 1943.

Gasket

Goetze Gasket & Packing Company, New Brunswick, New Jersey, has issued the first of a new series of technical bulletins on gaskets. The current bulletin describes research used in determining unknown factors in gasket engineering. Succeeding issues will treat the study of each type of gasket, individually.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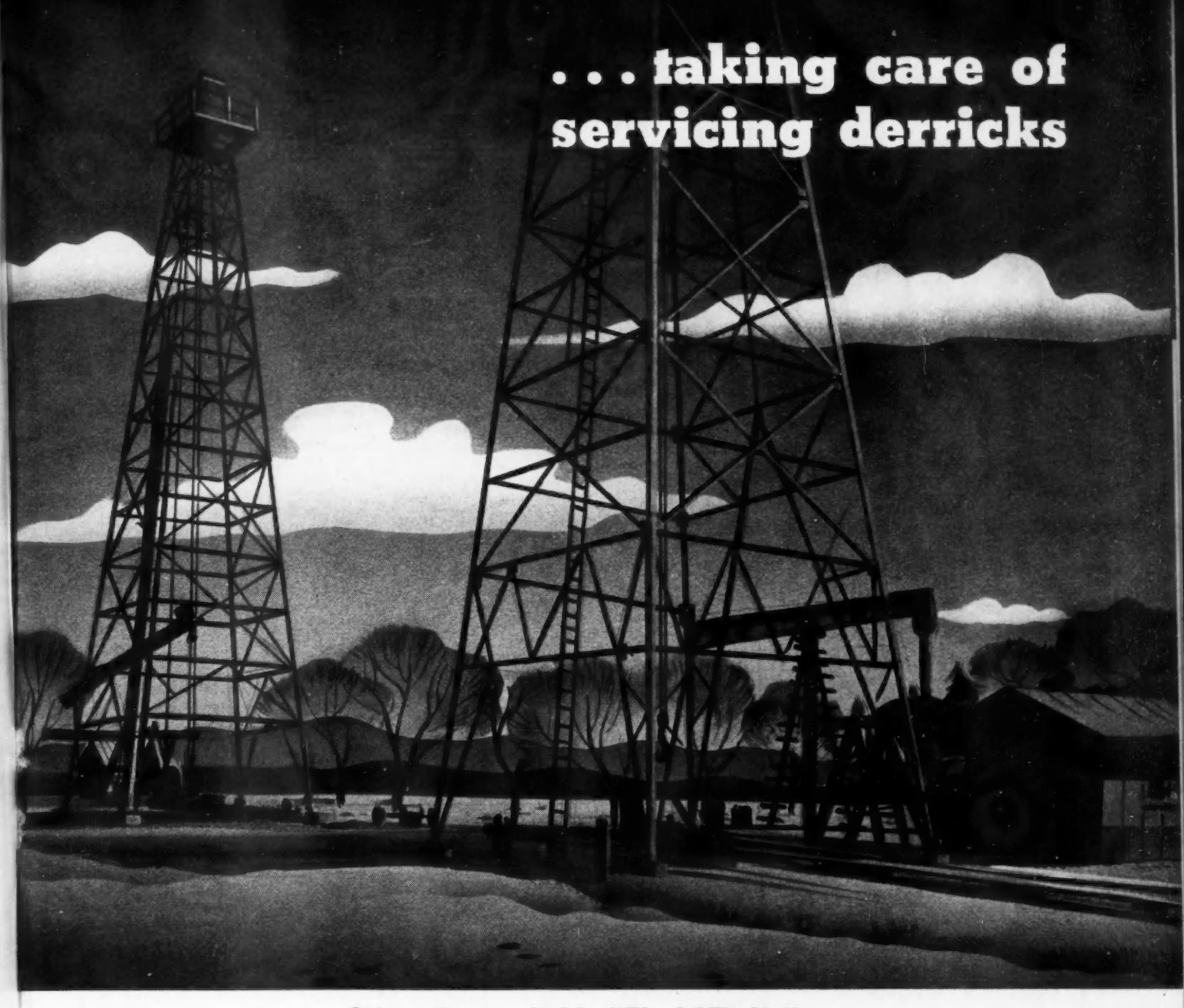

. . . taking care of servicing derricks

Information supplied by "The Oil Weekly"

To obtain long life from servicing derricks they should be:

1. Protected from rust and corrosion. When painting, old coat should be completely removed to prevent covering rust blisters that will speed disintegration.

2. Kept tight. Wind stresses, expansion and contraction, frost and heat tend to loosen joints, subjecting bolts to direct shear.

3. Checked for proper alignment over well before pulling rods or tubing. Otherwise, entire load may be concentrated on one or two legs.

4. Guyed properly against possible windstorms. Guys should be looped around, or firmly attached to, a leg member—not merely passed through an eyebolt or around a brace.

5. Properly supported. Rain, frost, or even lease traffic can sometimes shift a concrete foundation pad so as to leave one or more legs practically unsupported or even under tension from suspended base.

6. Guarded against unanticipated stresses. On pumping wells, a girt is sometimes used to carry the outer bearing for a water well or other pitman or beam. Connecting members are thus subjected to damaging vibration or overstressed to the point of premature failure.

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SINCE 1912

TULSA, OKLAHOMA

Men in the Industry's News

L. L. BRUNDRED has resigned as general sales manager for Spang Chalfant, Incorporated, Pittsburgh, to re-enter the oil business, effective July 15.

W. CARROLL MITCHELL, West Texas scout for Continental Oil Company, has been promoted to district land man with headquarters at Midland. He succeeds Erle E. Payne, who resigned to operate independently. W. J. Jackson has been given the scouting assignment.

FRANK D. GARDNER, Midland oil reporter, has been engaged as production scout for Sinclair Prairie Oil Marketing Company in West Texas and Southeastern New Mexico.

J. D. DAVIS, formerly with British American Oil Producing Company, is now in charge of the new Tulsa office of Ashland Oil & Refining Company.

G. B. BLAIR, Mid-Continent Supply Company salesman, has been transferred from Oklahoma City to Tulsa.

ROBERT P. REID, Phillips Petroleum Company geologist, has been transferred from Bartlesville to Denver.

V. M. RUSSOM, geologist for Sinclair Prairie Oil Company in Oklahoma, has been transferred to Lander, Wyoming.

E. W. SISNEY, Cities Service Oil Company, Oklahoma City, has succeeded Archie Kautz at Amarillo, Texas. Kautz was transferred to Bartlesville.

W. C. KNEALE, The Texas Company, has been promoted to superintendent of all operations of the company in the Illinois basin.

ALVIN ZWERNEMAN, vice president of Axelson Manufacturing Company, has been appointed special assistant to the director of materials, PAW, Washington, and left California on July 15, to assume his new duties. His work will have to do with the coordinating of raw material sources for manufacturers of petroleum industry equipment. Ken S. Ramey will act as temporary California sales manager to take Zwerneman's place. His headquarters will be at the Los Angeles plant.

DONALD B. FOSTER has been appointed assistant sales manager of the Pittsburgh Equitable Meter Company. He was formerly district manager for the Pittsburgh territory. In his new capacity he will be acting head of the sales division for both the parent concern and subsidiary, Merco Nordstrom Valve Company. He is a native of Pittsburgh and a graduate of Carnegie Institute of Technology.

R. L. TOLLETT, president of Cosden Petroleum Corporation, has announced reelection of directors and officers at annual meeting held July 19 at Big Spring, Texas, headquarters. The company has expanded its exploratory and field development operations in the east portion of the Permian Basin this year.

E. S. DURWARD, equipment engineer for Shell Oil Company, Houston, died July 16. He was educated in the schools of Edinburgh and Glasgow, Scotland. After 10 years with engineering and gas companies, he went to Egypt for the African Prospecting Syndicate to drill for oil. Two years later he returned to London and joined a firm of consulting mining engineers. In 1913 he came to the United States for the Shell interests. He had lived in Houston for 12 years. He was a member of API and did outstanding work in the Institute's division of production, as chairman of Group 2 subcommittee on standardization of production valves, derricks, belting, and pumping equipment.

CHARLES B. SHAFFER, 84, died July 18, at Chicago. He helped open the Cushing field in Oklahoma in 1912 and later was successful in Louisiana, Texas and Kansas operations.

C. T. GAMBLE, 50, with The Pure Oil Company 24 years, died July 18 at Tulsa.

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